



L. L. DUNBAR, D.D.S.
Dean University of California, College of Dentistry.

ITEMS OF INTEREST.

VOL. XII.

PHILADELPHIA, JULY, 1890.

No. 7.

Notes from the Profession.

Chloride of Methyl.

M. L. RHEIN, M.D., D.D.S., NEW YORK, N. Y.

[The following is of great interest to every dentist. It marks a distinct and important step forward. Dr. Rhein will have the thanks of the whole profession, for maturing the means of obtaining sensitive dentine, and giving us a local anesthetic of so much power and ease of application.]
—ED. ITEMS.

CHLORIDE of methyl was discovered in 1834. Its production was at first too complicated and expensive to admit of its general use. It was made by heating a mixture of sulphuric acid, methylic alcohol and sea salt. A very cheap process has been invented by C. Vincent, of France, and all the chloride of methylic used in that country is manufactured near Paris, under his patent. He takes the remnants of beets used in the manufacture of sugar, and extracts from these the chlorate of trimethylamine, which, being subjected to a sufficient degree of heat, produces the chloride of methyl.

At ordinary temperature this is a colorless gas of slightly etherous odor and sweetish taste. It boils at 23° C. Above this temperature it can be kept in a liquid state only by keeping it under high pressure in very strong air-tight vessels. When relieved from pressure it returns at once to a gaseous state, producing a reduction of temperature from 23° C. to as low as 40° C.

Malassez and Ranvier have for some years employed this principle of artificial refrigeration for freezing histological specimens. The commercial value of chloride of methyl consists principally in its use for the extraction of perfume.

Debove is entitled to the credit of having first used chloride of methyl medically. The first patient on whom he used it had been suffering from a severe attack of sciatica, for the cure of which various treatments had been employed in vain. Of this case Debove writes as follows: "I passed the jet of chloride of methyl over the entire painful surface, from the hip to the external malleolus. A minute later the patient, who till then could not put his foot to the ground, walked around the ward without limping." Up to 1885 he had used the chloride of methyl in over one hundred cases. Since then numerous successful results have been published, mainly by French physicians. In 1884, R. D. Santelli published the results of thirty successful cases treated by this means. Dr. Olive, of Nantes, described four successful cases.

Before various meetings of the Société Médicale des Hospitaux various successful experiences with this remedy were detailed by Rendu, Bucquoy, Senestre, Legroux, Tenesson, and F. Rouillon, of whom the last detailed five cases of trigeminal neuralgia of from three months' to fifteen years' duration, in two of which both nerve-stretching and re-section had been performed unsuccessfully. Four of these cases were cured and one relieved.

A. Peyronnet de Lafonvielle writes of eight cases of trigeminal neuralgia of long duration, which were relieved after several applications. In the article by Dr. G. W. Jacoby on this subject, previously referred to, he mentions five cases of trigeminal neuralgia treated by this method. He says: "In all five cases the pain was entirely relieved after the first application. In one of the fresh cases there was no return of

the pain. In two others the pain returned and a second application was made, with the result of relieving the pain again. In these also there has been no return. One of the old cases was so much ameliorated, after four applications, that he discontinued treatment, tho not entirely well. In the fifth case I was able to obtain relief after each application, and tho six applications were made, there is no sign of permanent improvement. My general impression from this brief experience is, that we have in the chloride of methyl a reliable analgesic, which does not effect the general condition of the patient, and that it is invaluable in the treatment of neuralgias for the immediate relief of severe pain."

In the first successful experiments, the substance was placed in an ordinary thick glass syphon, provided with an attachment piece by means of which a spray could be produced. Numerous explosions of these syphons caused their abandonment. The apparatus as at present constructed consists of a copper cylinder, having the capacity of about one litre. Above the cylinder is a strong screw which, when fastened down, prevents the escape of the methyl. When this screw is loosened the fluid escapes through a lateral opening into a smaller brass tube, through the mouth of which it comes in the form of a fine spray, which can be regulated in the most delicate manner by means of a micrometer screw. The brass adjustment is not well calculated for reaching the distal aspects of the posterior teeth, but does very well for other surfaces. I have designed for these posterior surfaces a special attachment which overcomes this difficulty. There are three methods of application, as follows: First, the direct application of the spray. Second, the glycerine method of Bardet; the part being covered with glycerine the spray is directed against it, and the frozen glycerine is supposed to produce a more intense cold. Third, the "stypage method" of Dr. Bailly, which consists in making a tampon of prepared cotton which ought to be enveloped in fine silk; (the cotton can be covered with glycerine if desired), and, while being held with a pair of dressing forceps, deluged with spray and then immediately pressed against the painful point. The intensity of cold obtained by this method depends on the pressure with which it is applied against the surface, and it is supposed will produce a more intense cold than either of the other methods. It requires, however, too large a tampon to make it practicable in average-sized cavities of teeth. This is the method, however, which seems to produce the best results in the various forms of facial neuralgia. I have also found it invaluable for producing relief and curing incipient pulpitis, by means of the intense counter-irritation which it produces. The tampon should always be pressed against the point where the seat of the pain is located, but care must be taken not to hold it too long in position, as there is danger of its producing a blister or eschar; with a little care this can always be avoided. The tissue becomes pale and hard following the application, and there is a momentary burning sensation, followed by an immediate relief from pain. In numerous cases the pain returns again, and often it requires three or four successive applications to obtain a permanent cure. There are, however, forms of deep-seated neuralgia, which, while they are temporarily relieved, occur again at intervals. Jacoby's explanation is, that when the neuralgia is situated in the *nervi nervorum* (as it most generally is) the severe cold entirely destroys, or at any rate completely paralyzes these nerve filaments, but when the seat of pain is in the nerve fiber itself, being not so accessible, the pain returns.

My first experience with the chloride of methyl occurred in February last. Mr. M., a professional vocalist, was sent to me for relief from severe neuralgic pain. A dentist, in extracting the right inferior third molar, had removed all of the process and a sufficient amount of the maxilla to expose a portion of the lower dental nerve; cocaine produced a short respite; but the patient returned soon after with a recurrence of the pain and an agonizing appeal for something to be done for his relief, so that he would be enabled to sing that evening. In my dilemma I thought of the chloride of methyl, and, having sent for Dr. Jacoby's cylinder, I used a tampon, which resulted in an entire dissipation of the patient's suffering.

Early in March I procured from McKesson and Robbins a cylinder filled with chloride of methyl which they import from Paris, and determined to keep a record of my observations. I will detail a few of the most interesting cases.

March 5. Mrs. L. presented herself to have the posterior proximate and crown surfaces of the left superior second bicuspid and the anterior proximate and crown surfaces of the left superior first molar filled. Within the past two or three weeks she had a number of cavities filled without much pain. She was not of the nervous class that suffers from the slightest touch of an instrument. The excavation of these cavities proved to be excruciatingly painful; they were deep, but did not reach the pulp. The rubber dam having been applied and the cavities dried, the cylinder of methyl being held in the left hand, and the screw having been loosened, the nozzle was pointed as near the cavity as possible, and with the right hand the micrometer screw was opened for about fifteen seconds. After this application the cavities were thoroughly prepared by means of large engine burs and hand instruments without causing the slightest pain; the patient complained of a momentary sensation when the spray first struck the tooth's surface, but was delighted with the result. No bad effects have been noticed since, and on July 10th it was found that the tooth responded perfectly to the cold and heat, showing that the pulp had not been injured.

March 18, Mrs. K. had a large cavity in the left inferior second molar to be filled; she was of that intense nervous temperament that dreads every movement the operator makes. Her teeth had been under my charge for the past eight years, and I knew by bitter experience that operating for her was alike agonizing to dentist and patient. She was very skeptical, and my first application of the spray to the tooth was not effective. I did not use enough methyl. A second application produced complete local anesthesia.

March 21. Mr. P., aged eighteen, a very nervous young man, and difficult to operate for; the right upper second bicuspid had a small cavity on the posterior proximate surface, very sensitive. The application of the chloride of methyl produced complete local anesthesia which lasted about two and a half minutes. It required two applications to prepare the cavity.

April 3. Miss C. presented herself suffering with a toothache so severe as to cause an intense neuralgic headache. The second upper right molar had a large cavity, reaching almost to the pulp; it was excruciatingly sensitive to the touch; the application of the methyl produced a momentary pain which was intense, but this was followed by complete local anesthesia and an immediate disappearance of headache. Sensation returned before the cavity was entirely prepared, and a second application was required to complete the operation. A temporary oxyphosphate filling was inserted, and there was no recurrence of pain.

April 19. Miss S. had cavities on the anterior proximate surface of the second right upper bicuspid and the posterior proximate surface of the first right upper bicuspid. They were acutely sensitive to the touch, but an application of the methyl produced complete local anesthesia, and a temporary filling of gutta-percha was inserted. On May 6, after removing the filling, the cavities were found to be so acutely sensitive that another application was made, the result being that gold-fillings were inserted without the patient having any appreciable sensation of the operation.

April 22. Miss F., of nervous temperament, had a cavity on the posterior proximate surface of the second lower left molar; it was impossible to obtain direct access to the cavity with the nozzle of the spray apparatus, as then constructed, but an application was made as well as possible. It seemed only to increase the pain, and a second and third application produced no better result. The patient endured the pain, and had the cavity filled, but complained of intense suffering from the tooth during the following two nights, when the pain disappeared. On recent examination the pulp was found to respond perfectly to heat and cold.

April 26. Mrs. F. had filled with copper amalgam on the day previous a cavity

on the posterior proximate surface of the second upper left molar. The cavity was deep, reaching under the gum, and, tho sensitive, no application was made on account of its inaccessibility. She had suffered all night with pain, and there were present all the symptoms of incipient pulpitis. A tampon of cotton having been covered with glycerine and thoroughly saturated with chloride of methyl, was pressed firmly on the gum at a point where the apices of the buccal roots were supposed to be; immediate relief ensued. In about five minutes the pain returned, and again disappeared after another application. After longer intervals there was a recurrence of a lesser amount of pain, but after the fourth application the pain disappeared not to return.

April 27. Miss S. had the first lower right molar filled with copper amalgam six months previously. It was very painful at the time, and has always remained sensitive to cold and heat, which symptoms have increased in severity during the past week so much as to indicate approaching death of the pulp. After applying the rubber dam, the tooth was thoroughly saturated with the methyl spray, which produced immediate relief from all pain. With a recurrence of pain, four separate applications were made, after which the rubber dam was removed. The patient experienced complete relief for about twenty minutes, when, according to her statement, the pain returned in a more intense form than had yet been experienced, and seemed proof against all counter-irritant treatment. An opening was then made through the filling into the pulp chamber, and the pulp removed.

The above detailed descriptions will give an idea of the average results obtained. Out of seventy-six cases, four alone were found to be proof against the action of the methyl, and two of these are believed to be from the inaccessibility of the cavities.

In conclusion, it is believed that in the chloride of methyl will be found a valuable addition to our therapeutic armamentarium. It appears to be the most reliable local anesthetic yet introduced for preparing teeth for filling, tho it is advised not to use it in a cavity near the pulp. It is wonderfully effective in affording immediate relief in all forms of neuralgia, and permanent cure in a majority of cases. Lastly, it has been found to be very potent in the cure of incipient pulpitis, and tho its application is always variably painful, it seems to be generally preferred by patients to the pain from which they have been suffering.—*The Dental Review*.

Chloride of Methyl.

[The following is Dr. Rhein's second article on chloride of methyl, and its discussion in the Alumni Association of the University of Pennsylvania, as reported by the *Cosmos*.]—ED. ITEMS.

THE use of cold as a therapeutic agent is anything but new or novel. As far back as history can trace the art of alleviating human suffering, both heat and cold are constantly met with, and it is more than probable that their use in this connection antedated everything else.

The use of *intense* cold for producing local anesthesia by freezing was first called to public notice by Dr. B. W. Richardson in 1866. To him belongs the credit of introducing the spray of sulphuric ether. This was supplemented by Dr. Henry J. Bigelow's use of the rhigolene spray.

Both of these agents were used in dental practice quite extensively at that time, in the extraction of teeth. The gums were frozen, and the teeth removed with local anesthesia. From recorded observations it appears that the ether produced the most satisfactory and uniform results. This may have been due to systemic effect produced by inhalation.

As a substitute for both of these agents, Mr. Jas. Arnott, of London, introduced bags of an ordinary freezing mixture of pulverized ice and salt.

Numerous appliances were introduced for the application of these agents; but with the advent of nitrous oxide their use grew gradually less, till at the present day the practice of extracting teeth painlessly by means of freezing the gums has almost entirely ceased. Nor is it the purport of these few remarks to advocate such a pro-

cedure, for we have now better methods. It is, however, a remarkable fact that of all the men who were producing local anesthesia in this manner for extracting, only two thought of extending its usefulness toward helping to preserve the natural teeth. If there were any others, they seem to have refrained from imparting their information to the profession at large.

Dr. J. R. Finney, of Youngstown, Ohio, writes as follows in the *Dental Cosmos* for December, 1866 :

"I have been experimenting with the narcotic spray-producing apparatus on sensitive teeth, and find I can successfully clean and fill those teeth that have heretofore given so much pain to the patient and trouble to the operator." In the same number of the *Cosmos*, Dr. J. H. McQuillen, the editor, has a leading article on the subject, in which he testifies to the correctness of Dr. Finney's statement as follows : "A few days since, in operating on a right upper bicuspid, in which the dentine was so sensitive the patient could hardly bear the contact of the instrument, I employed the ethereal spray as suggested by Dr. Finney, and found the dentine could be excavated with no discomfort to the patient, immediately after the application had been made." He also, in this article, advocates the use of the spray for extirpating living pulps. In speaking of the care requisite in the use of the spray, he says, "That unfortunate results may be induced by careless or ignorant persons is beyond question ; it is important to remember, however, that all inventions and improvements in the arts and sciences are liable to opposition from misapprehension by those who, failing to recognize the true value of a discovery, magnify all apparent and intrinsic defects."

It is evident from these quotations that Dr. Finney wrote very briefly to Dr. McQuillen on this subject, and that Dr. McQuillen then tried it in his practice, and finding it successful indorsed it in the same number of the *Cosmos* in which Dr. Finney's short article appears.

That this never attracted much attention in the profession is plain from the fact that nothing more on the subject appears in our literature during more than twenty years. Even at this late day, this early mention of the spray in this connection was only accidentally made known to Dr. Ottolengui by Dr. F. T. Van Woert, who was turning the pages of the old numbers of the *Cosmos* about the time when Dr. Ottolengui was, as he thought, for the first time introducing the ether spray as an anesthetic for sensitive dentine.

We may, therefore, say that Dr. R. Ottolengui is entitled to the credit of introducing the use of the ether spray for the purpose under consideration ; for the idea was not only original with him, but by persistent clinics and a number of articles written for the journals the profession was compelled to take notice of his views. This teaches the valuable lesson that new methods cannot be made to attract attention if written about but once.

Having witnessed Dr. Ottolengui's clinical demonstrations with the ether spray, I gave it numerous trials. It will almost invariably produce the result, but has numerous disadvantages, such as length of time required to attain the desired effect, and the consequent saturation of everything and everybody with the disagreeable odor of the ether. So much of it is required that it is difficult to strictly limit its action on the part desired to be operated on, and not by any means the least important objection is the inhalation of a very considerable amount of ether by the patient. The want of our present rubber dam, together with the above objections, were undoubtedly the reasons why nothing further was heard of its use as a local anesthetic in preparing teeth for filling between the time of Dr. McQuillen's article in 1866 and that of Dr. Ottolengui in 1888.

In the endeavor to overcome these difficulties it was noted that all of the volatile liquids by means of their rapid volatilization would produce a degree of cold, the intensity of which was in exact ratio with the rapidity of volatilization. In this connection carbonic acid gas and nitrous oxide are superior to ether or rhigolene, and in the same manner is chloride of methyl superior to these agents because it abstracts

the heat so much more rapidly on account of the greater difficulty of keeping it in a liquid form.

Assuming that you are familiar with current dental literature, I will only take up a short time in recording recent results of my observations and the deductions made from them.

Having used the chloride of methyl for over one year and in over three hundred cases, I speak with the confidence that the long use of one article or method will alone assure.

Later observations have only strengthened and confirmed my views as heretofore published.

Not a single case of death of the pulp has resulted. In a small percentage of the cases where the cavity extended near the pulp there has been some subsequent irritation, which has invariably passed away within a few days. This irritation is almost invariably met in such teeth whether the methyl be used or not. Still, it is in these cases of close proximity to the pulp that it should not be used unless absolutely necessary, and then with great caution. This is the only class of teeth in which any bad result is to be feared; nevertheless, while using it frequently in such cases, I have no dead pulps to report. Its most valuable and beneficial effect is met in excavating in the interglobular spaces between the enamel and dentine. These often acutely sensitive places can be prepared without the patient feeling the slightest touch of the instrument.

In youthful patients the methyl should be used with great caution; while with more elderly parties much less care is required. In fact, the greater the density of the tooth-structure, with so much more impunity can the methyl be used.

The chloride of methyl was employed in the removal of twenty-one living pulps. In eleven cases extirpation was accomplished without any pain; in five there was some slight sensation toward the close of the operation, but not sufficient to annoy; in three cases only a partial anesthetic effect was produced, and in two (among the very first) it seemed to be entirely ineffectual. It is my present belief that the methyl was not well applied to these two cases; they were posterior teeth, and difficult of access with the means at my command at that time. It was invariably successful in the anterior teeth, and less so as it was used more posteriorly. On the molar pulps it was least efficacious. In old people it worked like a charm. The history of one case seems worth recording.

Mr. N., a young German, aged about twenty-four, while engaged in a street fracas had four-fifths of the crown broken from each of the upper central incisors. He made his appearance at the office suffering severely from the exposed pulps. The rubber dam having been adjusted, the spray was applied to the exposed pulps with full force, resulting in the patient's agonized expression changing almost instantly to one of calm repose. By means of repeated applications of the spray, every vestige of two remarkably large pulps was removed without any return of sensibility to the parts. The roots were immediately filled at their apices, and on the following day two Logan crowns were inserted, to the patient's great delight.

The methyl having been once applied to the pulp, it should be re-applied as soon as the faintest sensation is apparent. In this manner the operation can be prolonged indefinitely. The greatest obstacle to the successful use of the methyl in pulp-extirpation is the formation of ice in the canal. If at the first twist of the broach the entire pulp has come away, the operation is invariably a success. When, however, the pulp is lacerated and considerable hemorrhage ensues, the application of the spray causes the larger end of the canal to become packed with ice, and this is a serious obstacle to the passage of the broach.

In the treatment of neuralgias the methyl is invaluable. It will almost invariably bring about an immediate relief from pain, if not an absolute cure. Attention is especially called to its wonderful efficacy in relieving the various headaches resulting from peripheral irritation around some portion of a tooth, be it an exposed pulp,

pericementitis, an alveolar abscess, or the result of some medicinal irritant. To cite a case: Miss K. was sent to the office suffering with severe odontalgia in an upper lateral. Diagnosis of suppurating pulp under a gold filling. On entering the pulp-chamber there was a free discharge of ichorous pus, which soon brought relief to the patient. The opening at the foramen had become considerably enlarged, and tho the hydrogen peroxide was injected very gently, the irritation resulting around the apical space produced a severe headache. This was instantly dispelled by the spray of methyl.

In conclusion, I have a few words to say, which I wish could be heard by the entire dental world, and especially by those opponents to progress who listen to essays and watch clinics, not to extract the good that is presented, but with eagerness only to point out what in their narrow views may seem to be objections, and when the objections are met still prefer the old way.

The crying need of the hour in dentistry is *anesthesia for sensitive dentine*. All the progress of medicine may truly be said to depend on the discovery of anesthesia. Surgery depends entirely on it in its greater aspect, and through its aid thousands of lives have been saved which would otherwise have been sacrificed.

Similarly with us. It is a world-wide cry against the dentists that they torture their patients. Those of strong physique submit, and endure the agony entailed in dental operations. With a second class this is simply an impossibility, and thousands of teeth are neglected and lost from this cause, even though the patients may be able to pay for our most skilful services. Then there is a third class of patients, those who, after months of torture in anticipation, finally come into our hands, and with nerves strung to a hurtful point, pass through the ordeal and have their teeth saved, but at what a cost! We do not sufficiently consider the consequences of shock in the dental chair. Yet, undoubtedly, many suffer for months, and even years, from injuries to the nervous system received whilst in our hands.

The greatest duty of our profession to-day is to discover and adopt a mode of painlessly performing our operations. This discovery has been announced so often that you have reason to doubt each new method that is offered. But for all that, you owe it to yourselves, to your profession, and, more than all, to your patients, to investigate the claims which I make, and to adopt whatever is beneficial, if your experience shall be in accord with my own.

Dr. E. C. Kirk, Philadelphia, in opening the discussion, said that the compound under consideration is one of the substitution products of marsh gas. Methyl chloride, under a pressure of two and a half atmospheres, is a liquid of a volatile nature, which boils at about 40° C. It is unique in occupying a position just between the liquids and gases, ready to be volatilized when released. The difference between its physiological action and the properties, by which it produces such extreme cold, should be noted. When he first heard of its use for the purpose indicated in Dr. Rhein's paper, a prejudice against it was formed in his mind, due to his having seen bad results from the use of the ether spray for obtunding sensitive dentine. One case he recalled in which ether caused disaster not only to the molar to which it was applied, but also to the two adjoining bicuspid. Such facts made him fear any agents whose action could not be limited. He, however, procured the apparatus for exhibiting the chloride of methyl, because he wanted for another purpose such a degree of cold as it would produce, and, having it, he was led to make an application of the medicament in a case of pulpitis. The effect produced convinced him at once of its efficacy. So far all the cases in which he has tried it have been those in which there was pulp-exposure. One case was where a patient had an exposed pulp in the second lower molar on the left side, and following the exposure a severe otitis ensued. He applied a sedative, and twenty-four hours afterward made the usual arsenical application. In one and a half hours violent pains were set up, which cried aloud for relief. The cylinder of methyl chloride stood handy, and he made an application of the cotton pellet saturated with the agent, and the pain vanished.

He removed the arsenical application while he held the cotton to the tooth, and twisted off the pulp. Ever since he has been using cold pellets freely for aching teeth; but his doubt as to the limitation of the effects still prevents his using the agent for the purpose for which Dr. Rhein recommends it, so that he has not yet tried it for obtunding sensitive dentine. He hesitates to use it for this purpose, because a temperature of -40° C. can be produced by it, a temperature sufficiently low to freeze mercury, and the effect of which on living tissues can only be conjectured; that is, if this temperature is produced when it is used in the manner indicated. Dr. Rhein may have means of controlling its action, so that this temperature is not reached. He had used it only yesterday in a case where inflammation was set up after the capping of a pulp, and it relieved the pain at once. So far as he has gone with it, he can bear out Dr. Rhein's statements.

Dr. Rhein, in reply to the suggestion of injury to the pulp from such extreme cold, said he would not use the drug where there is an exposed pulp. The manner and the cases in which he uses it are detailed in the paper. He would not even use it in a cavity where he could see the line of the pulp through the intervening dentine, but where that line could not be seen he considered its use safe. The fact that, where extreme cold has been applied to the living pulp for the purpose of extirpation of a portion of it, the pulp will return to sensibility, shows its wonderful recuperative power. He has looked carefully for dead pulps following the use of this agent, some of the cases having been under observation for more than a year, and he has seen no bad results. He hoped that Dr. Kirk would try it on sensitive dentine.

[Dr. Kirk then demonstrated the capacity of the agent in producing cold by freezing water in a test-tube to a solid mass in a few moments.]

Prof. Truman had opposed some of the points in Dr. Rhein's paper, when he heard him on a previous occasion at Asbury Park. He did not find fault with this agent in particular, but generally in regard to the action of extreme cold on living tissue. If Dr. Ottolengui did not know the objections to this method of treatment, that was his fault. There is no more effective agent for reducing pulpitis than the rhigolene spray; but, on the other hand, when such extreme cold as it produces is applied to a living pulp, the laws of physiology are violated. Such cold will produce death and sloughing by one minute's application. All through the tooth are minute prolongations of the pulp, and anything that acts on them certainly acts on the pulp directly. He cannot understand how a degree of cold so intense when applied to the tooth will not produce destruction of the pulp. It is like other tissues, composed of nerves, muscle, blood-vessels, etc., and it may be more highly endowed with resistant powers than other tissues, but it must suffer under such circumstances. It is for this reason that he objects to its use, and the class will bear him out in the statement that he barely mentions it in his lectures.

Prof. Chas. J. Essig finds much in the quickness and delicacy of the operation of this agent to commend it. The production of local anesthesia by cold is not new. From 1866 to 1868 almost every one in practice used the ether or rhigolene spray for that purpose, but there is a vast difference between these and the agent now under discussion. They occupy two or three minutes in producing the effect; this acts almost instantaneously. The moment it is applied the effect is shown on the periphery of the pulp-prolongations, without being continued long enough to be carried to the main body. Now, it is a fact that the teeth are constantly subjected to the most violent extremes of temperature without apparent injury. Hot tea or coffee and ice-water are not infrequently taken at the same meal, and the fact that the teeth do not suffer is evidence of the inherent vitality or recuperative power of the pulp. The great merit of this agent is the quickness of its operation, for which reason he conceives it to be the best he has ever seen for the purpose for which it is used. He can readily see how death of the pulp may be produced by rhigolene or ether. It takes them so long to produce their effect that their action is diffused and carried along to the pulp; while this acts so promptly that its effect is all felt

near the point of application. He compared the chloride of methyl to a keen-edged instrument, which does its work thoroughly and quickly.

For his own part he does not have much trouble with sensitive dentine; it is not by any means the most extensive trouble he encounters, tho it occasionally occurs, and in such cases this agent appears to have a place.

Prof. Truman. Does not the action of this agent extend to the pulp?

Prof. Essig had only staid his impressions. He sees no reason why the action cannot be limited.

Dr. Kirk had the same idea in mind. He had said that the effect of an application of this agent might extend far beyond the needs of the case, but the size of the pledget of cotton is of itself a limit to some extent. If the temperature is carried as low as it possibly can be by this agent, say -40° C., there are two things to deal with, quantity and degree of cold, but the quantity is so small that on becoming reheated, it is not able to diffuse itself very much. He has been in the habit of treating pulpitis by cold, that is by gradually lowering the temperature. So his first application of this agent was very slight, and the pain was merely increased; he next applied it directly to the inflamed pulp, and the pain was controlled at once. The best way to decide the merit of anything is to test it. So far he has used chloride of methyl only in those cases where he intended to remove the pulp.

Dr. Rhein was much pleased with the tenor of the discussion. Prof. Essig had stated clearly what he had himself intended to tell as to the difference in the time of the action of the agent now under discussion and of those formerly used. As to the objection by Prof. Truman, that it may cause injury to the pulp, all he had to say was that he had used it more than a year, and he has not yet seen a dead pulp from its use; but he does not use it near healthy pulps. In one of the cases cited in the paper the pulps were so large that he failed to remove all of either of them, except after several trials and reapplications of the agent. The patient absolutely felt no pain as long as the effect of the application continued, but he found evidence of returning sensibility whenever he let up on it for a moment. He does not advocate the use of this agent for every case. He only uses it in refractory cases, especially those where there is sensitive dentine around the necks of the teeth, and in these it is perfectly effective, and there it is used with perfect impunity. He has abandoned the method of applying it on a pellet of cotton, and finds the application of the spray directly on the sensitive dentine is more effective. He gives the full force of the spray at once, and the action is instantaneous. He has patients who have been with him ten years, whom he could not control till he used this method, and now they are as easily handled as any. There is some pain accompanying the application and some shock, which varies with the individual. Curiously, very nervous patients who require it most bear it best, while those who stand ordinary operations readily without it suffer a little more when it is applied. He has used it on this latter class more to satisfy himself as to its effects than because of any need for it.

Prof. Essig. The freezing of tissues, if done quickly, does no harm. In the old days of the use of rhigolene he used to freeze his finger, occasionally, till it was quite white, and on ceasing the application the sensitiveness soon returned. In 1881, while in Europe, he saw a young man who was so badly frozen in making the ascent of Mont Blanc that he lost his toes. He believes it is long exposure to the cold which does the damage; that a brief exposure even to intense cold does no harm, because there is no time for the effect to become diffused.

One Language and One Speech.—This is the only great country which has but one language. In England, the Yorkshire men cannot talk with the man from Cornwall. The peasant of the Ligurian Apennines drives his goats home at evening over the hills that look down on six provinces, neither of whose dialects he can speak or comprehend.

The Regulation of Sleep.

INSOMNIA is rightly regarded as one of the marks of an overwrought or worried nervous system, and conversely we may take it that sound sleep, lasting for a reasonable period, say from six to nine hours, is a fair test of nervous competence. Various accidental causes may temporarily interfere with sleep in the healthy; but still the rule holds good, and a normal brain reveals its condition by obedience to this daily rhythmic variation. Custom can do much to contract one's natural term of sleep, a fact of which we are constantly reminded in these days of high pressure; but the process is too artificial to be freely employed. Laborious days, with scanty intervals of rest, go far to secure all the needful conditions of insomnia. In allotting hours of sleep it is impossible to adopt any maxim or uniform custom. The due allowance varies with the individual. Age, constitution, sex, fatigue, exercise, each has its share of influence. Young persons and hard workers naturally need and should have more sleep than those who neither grow nor labor. Women have, by common consent, been assigned a longer period of rest than men, and this argument, in the event of their doing hard work, is in strict accord with their generally lighter physical construction and recurrent infirmities. Absolute rule there is none, and it is of little moment to fix an exact average allowance, provided the recurrence of sleep be regular, and its amount sufficient for the needs of a given person, so that fatigue does not result in such nerve prostration and irritability as to render healthy rest altogether impossible.—*London Lancet*.

A Lady for whom we were filling teeth observed that Dr.—— had been her family dentist for a long time, and had given entire satisfaction with his work, but she "could not endure his hands, which were never clean." "The doctor, doubtless," we replied "does laboratory work, which is very soiling to the hands." "I can't say as to that," she answered, "but soap and water are cheap." This sent our apology for the doctor kiting, and we switched off the subject.—*Practical Dentist*.

New, Sharp Burs, with very rapid motion, not allowed to remain long in one place, so as to avoid heating, is the most successful painless operating I have yet found; it is often materially assisted by frequently wiping the cavity with warm carbohc acid. I generally use the rubber dam from the beginning of the operation.

Pain inevitably follows the use of dull burs; also sharp ones, if held in one position long enough, or pressed hard enough, to cause heat by friction.

I have not used cocaine with the electric battery, so cannot speak of it knowingly; I expect to shortly be able to do so, tho it is my firm conviction that eventually the practice will be robbed of that terror it now has to most of mankind.—*Dr. J. B. Newley*.

Setting Crowns.—The more readily the crown can be adapted the greater will be its usefulness. I strongly object to the great waste of tooth-bone that is made necessary by the use of many of the recent methods. For this reason I have used a great number of Logan crowns, which, after roughening the plantina pin, I attach with gutta-percha or oxyphosphate. I also use the Bonwill crown, but give the preference to the "Logan," as it can be used without amalgam. In setting crowns, I do not usually trim the root down close to the margin of the gum, unless the line of union between the root and crown will be very perceptible. When preparing to attach an all-gold crown, I take a cast of the corresponding tooth on the opposite side of the mouth; then, after slight trimming, make a metal die, and from this strike up the whole crown, which I make of foil scraps melted up and rolled out to about No. 25 of the standard gauge. These all-gold crowns I have found very useful where the root is badly broken. A plantina pin is first cemented in the root, and the crown attached to pin and root by oxyphosphate.—*Dr. E. H. Neall*.

Oxyphosphate and Alloy Combined.

DR. W. E. DRISCOLL, MANATEE, FLORIDA.

TODAY I extracted, for a lady, three upper bicuspsids, that had been filled a year with amalgam. They were too badly weakened at the cervix to permit lining with cement and refilling, and were quite black. This leads me to inquire, Is the profession, generally, still neglecting the use of cement for strengthening weak teeth, to be finished either with gold or amalgam? I never fill a tooth with gold entirely, if I can find any room in the cavity for cement. It often improves the anchorage, even when the cavity is shallow. It can be placed in parts of some cavities that can not be as perfectly filled with gold, or any other material. I thus save to myself and patient some of the most difficult and exhausting part of my labor; but there are hundreds of dentists all over the country packing two or three times more gold into teeth than is needed.

More important still, is the use of alloy in connection with oxyphosphate. I commenced, over five years ago, the practice of covering cement fillings, while yet plastic and adhesive, with a plating of your gold and platina alloy. The result has surprised me. Teeth that I filled in that way, as an experiment, and such as would not bear any other kind of filling, now, after four or five years' use, would not be suspected as having ever been such weak-looking shells as they were when presented for filling. I had, before that time, filled teeth with cement, and afterward cut out a portion and replaced with alloy; but such a plan has many objections, as compared with placing the alloy in the soft cement. The latter makes altogether the stronger filling. In fact, the filling becomes the support and maintainance of the weak shell, instead of the shell having to clasp the filling.

By covering immediately with alloy, the cement is protected from moisture, thus making a permanent filling easier than a temporary with cement alone. How often we find teeth, we thought entirely safe to fill, showing in a short time an annoying sensitiveness, often followed with the death of the pulps. With cement intervening no such trouble will follow where ordinary care is exercised. In this way, also, exposed pulps can be capt, and the filling completed at one setting. In such cases the cement should be flowed into the exposed pulp very gently, and the alloy laid on the surface so it will adhere, and time given for it to set sufficiently to protect the exposed point of the pulp from pressure before adding all the alloy necessary to complete the filling.

Formerly I spoke of the use of cement only as desirable in frail teeth, or those of poor structure; but after five years' experience with it in very frail teeth the question arose, if it is so good in such teeth, why not in all cavities? So, now, I do not use alloy or amalgam in any cavity without first covering all the surface with cement. I believe the time will come when any other course with amalgam will be considered malpractice. We know very many of amalgam fillings do leak. There is no leakage under a good cement filling, where decay has been removed. We know the work of changing the shape of the cavity of decay to give anchorage is the most painful, and often the most laborious part of the operation; just what any one of us would most dread if we were to have our teeth filled. With cement to hold the alloy filling in the cavity, it is seldom any change of shape is needed after decay is removed. The cement prevents discoloration through the thin parts of the teeth, so with amalgam for filling teeth we do away with *leakage* and *discoloration*. In front teeth, where alloy is more objectionable than gutta-percha, a thin covering of the latter can be laid over the cement while adhesive, and pressed level with edges of the cavity with a flat, warm instrument, thus giving a non-leaking gutta-percha filling, which cannot be secured in any other way; but when the alloy does not discolor, except on the surface, it is not for cheap fillings so objectionable.

There is no denying that some children's teeth are too frail to have gold fillings at first. In such cases the above plan is a boon of inestimable value, as it will pre-

serve the teeth till they are hard enough to permit gold fillings. This one consideration would be sufficient to give this plan a high rank.

Simple as is this operation, no doubt many bungling operators will abandon the plan before learning its real value ; but this objection applies to all methods.

I have just read a description of some experiments in the use of a solution of gutta-percha to paint the inside of the cavity before introducing the alloy. I practised that plan ten years ago, but it is so inferior to this newer use of cement as to bear no comparison. Gutta-percha affords little or no anchorage, and there is shrinkage of the alloy, and the gutta-percha solution, making the result poor indeed. Another writer, in a recent *Cosmos*, speaks of mixing the filings of amalgam in the cement without mercury, and is careful to say it was not the plan I have described, which he had seen in the *Cosmos*, and in the *ITEMS OF INTEREST*, for I have described the plan before in both journals. No ; it is not the same, and while I do not care to discourage experiments in that direction, I have no doubt which plan will be adopted after a fair trial.

A word as to manipulation. Have the fluid and powder for the cement on a glass slab, in right proportions. Mix the alloy with as little mercury as possible, and press into a thin plate, dividing into suitable sized blocks or squares. Dry the cavity, and protect from moisture ; mix the cement just thick enough, so it will not flow. Cover all the surface of the cavity clear to the edges, almost filling it level full. As quickly as possible, press one block of the alloy into the adhesive cement ; then add alloy, and perfect the edges, carefully pressing out all surplus cement, allowing the cement to extend to the edge of the cavity, but not to show at any place. Practice will enable the operator to make a joint at the edge of the cavity, so there will be only a thin finish of the alloy at the immediate edge, which is desired to prevent leakage and discoloration. Many will be able to use alloy with much less mercury in this way. It will also be found that much more perfect condensation can be secured by laying bibulous paper, or a piece of muslin over the filling, and burnishing with greater force than could be done without it ; but hard burnishing must not be practised after the alloy has begun to set.

To make Herbst's Obtundent, first get a saturated solution of cocaine hydrochlorate in chemically pure sulphuric acid, and add sulphuric ether to the point of saturation, allowing the excess of ether to escape by evaporation. Our experiments on sensitive dentine with Herbst's obtundent have been more successful than with any other cocaine preparation we have used.

We attribute its efficacy to the combination of two or more local anesthetics in one solution. Sulphuric acid, when applied to living tissues possessing as low vitality as dentine, destroys all life as far as it penetrates ; and, by its chemical union with the lime-salts of the dentine, breaks down the structure sufficiently to furnish the cocaine free access to the peripheral extremities of the nerve-fibers. Whether the ether plays any important part, we do not know ; but it is a convenient vehicle for the other ingredients. Wherever this solution touches the enamel, effervescence occurs, showing the destructive nature of the sulphuric acid ; therefore, great care must be taken to protect the enamel from its contact.

Whether its action on the dentine will go far enough, after the insertion of the filling, to produce deleterious effects, our experiments have been too recent to furnish the necessary observations ; but we feel sufficiently uneasy on this point to use great caution. In one instance, we tried it as a local anesthetic for the gums, where a wedge had to be driven high against the festoon. It whitens the gum immediately on contact, giving it the appearance of having been frozen with ether spray, destroying sensibility to pain very effectually. The difficulty of applying it to the gum without allowing contact with the enamel, nearly precludes its use here.—*Dr. L. G. Noel.*

Speakers versus Phonographers.

RICHARD GRADY, M. D., D. D. S., BALTIMORE, MD.

THERE is an editorial in the current number of a dental journal, noted "as an evil needing correction; the unwarranted modifications made by the authors in the reports of remarks made at Association meetings." The theme is *apropos*, and the truth of the article is not the less admissible because a partial view has been taken, as seen through an editor's spectacles. There is, also, a view to be taken from those taking part in these meetings.

Recent past visions and memories of a stenographer's report of a meeting held in this city last December, rise thick and fast before me. To illustrate, suppose the stenographer's transcript reads:

"I then inserted plaster [plastic?] fillings." "I knew that oxy-phosphate fillings would resist the action of all non-acids." "Instances have come under my nose [notice?]." "The settling [setting?] of the plaster may be retarded by applying the finger [vinegar?] to it." "Filling aptitude of the hammer of the instrument." "Dental College of Western Maryland (?)." "The plaster filling." "Annealed or non-cohesive." "In that day no cohesive or gold foil." "Liable to go through tooth structure into the water." Suppose that you had read a paper on anatomy, and explained in the discussion of it, that you had advised with one of the Hebrew members of the association as to the knowledge of the Jews on the subject, and the stenographer reports you: "Upon consulting one of our members, who, I thought, was familiar with the peculiarities of the rattlesnake [Jews], he was unable to give me sufficient light on the point, and I was obliged to rely on the books." Suppose a long procession of such cases, and then consider that these are not suppositions at all, but are plain facts, culminating in the one special and significant fact that the bill rendered for this service was nearly one hundred dollars.

Criticism of "reportorial work" of the kind quoted, should not be pronounced "unmerited," even admitting that words are written in phonography as they are sounded. One or the other alternative must be accepted; either the stenographer's report, or the proof, must be transmitted to writers and speakers. No argument can be drawn from the abuse of a thing against its use. Believe one who has had the experience to justify the opinion that the facts differed completely from the transcript. The only way is to give speakers free access to such reports, to be corrected in accordance with the facts as they have occurred.

I have not written to find fault with the editorial referred to, because I know that the comment on "the remarks of the speakers who followed without meaning," is well founded, as in the report of the proceedings of our State Association, the president's address is not printed in the dental journal, so that the caption "discussion of the president's address," and the remark of one of the speakers, "among the subjects presented by the president," etc., are meaningless.

I am of the opinion that, without breaking the continuity of a paper read at a dental meeting, the writer should be permitted to add foot-notes to exemplify the text; and these notes should accompany the original manuscript, so as not to inconvenience editors. In the report on anatomy, to which I have referred, after spending three months in its preparation in the biological department of the Johns Hopkins University, I availed myself, as the result of the discussion of the paper, of the assistance of the department in assyriology in that institution to reinforce my statement as to the knowledge of anatomy possessed by the Jews, establishing in a foot-note: (1) that Hebrew had names for all the organs and their parts; (2) that in the Talmud there is recorded a case of dissection; (3) the ancient Jews had simple and effective remedies for diseases; (4) the sanitary regulations, concerning food, drew the attention of the Hebrews to anatomy.

If an impression of modeling composition is given a light coat of Sandarac varnish before filling with plaster, it may very easily be separated from the model.—F. A. Greene.

Artificial Crowns.

In the Odontological Society of Pennsylvania.

DR. LEECH. I have had my best successes lately with the Bonwill crown. The failures I formerly encountered with it were, I think, in a measure my own fault. My greatest fault had been in using the amalgam too stiff. If you get the crown nicely adapted to the root, there will be no rocking—an important gain, and one which will have very much to do with the final success of the operation. The labial portion of the crown should be carried as far under the gum as possible. The amalgam should be mixed rather soft; put some in the root; run an instrument up first, and then the pin, and see that it is firmly secured. Now try the crown on, and see if it is correct. Then put in more amalgam, packing it well in the root and around the pin; put some amalgam in the crown and push it well to place; and, finally, caution the patient to be careful of the tooth for awhile, till the amalgam is firmly set. Proceeding in this way, you will find that the operation is permanent. The amalgam will eat the pin off; but if you have a good adaptation, so that the crown will not rock on the root, you need not mind that, the amalgam itself will hold the crown in position. Do not have the amalgam too stiff in adjusting the crown, or the amalgam in the root and the amalgam in the crown will not join, but there will be a line of demarkation, and you will have nothing but the pin to depend on; but if the amalgam is mixt soft, and carefully worked up in the canal, so that there is one solid mass of amalgam in the root and in the crown, you will have a firm piece of work, even if the pin does give out.

Dr. Register. One great error in setting crowns is generally committed in the initiatory steps. As a rule the root is not properly dried. Few operators use hot air to dry the cavity; a precaution which goes far toward insuring success. If, because of failure to thoroughly dry the cavity, we have a space between the root and the material for setting the crown, decay will follow, when, if the moisture had been dried from the devitalized wall, a hermetical joint could have been made. In one of the most successful operations I have ever performed the crown was put on originally as a temporary expedient. It was done in a hurry, about twelve years ago, for a lady who was preparing to take a European trip. The tooth was a labial incisor, and a small one at that, which had been broken off by a fall from a carriage. I took out the pulp, selected a thin plate tooth of proper size and color, and a narrow piece of platina, and riveted them together; and with a pair of pliers gave a twist to the backing; no solder was used. The root was dried out thoroughly *with hot air*, and the crown set with oxychloride (there was no oxyphosphate in those days). The backing was then cut away on the palatal surface, and filled in with gutta-percha, and the patient dismissed. After her return I tried, on three different occasions, without success, to get the tooth out, to make a permanent operation. About two years ago I filled it permanently at the back with amalgam. The success of this operation has caused me to set several crowns in a similar manner. A better post is made by having threads cut in two directions, right and left, on the pin; it gives the appearance of many points on the surface. I use on the marginal surface, before setting the crown, gutta-percha collodion, flowing a thin film of the preparation over the walls. This I also use over sensitive dentine for the purpose of insulating fillings of metal; a film of the gutta-percha collodion, flowed over the cavity, prevents all thermal irritation, and renders the after-service much more comfortable. The film formed by the use of the gutta-percha collodion is caused by the evaporation of the chloroform contained in the preparation. You can apply cold air to sensitive dentine treated with this preparation without discomfort. Of course, to make a positive union, the dentine must be dry; this can be positively done in a devitalized tooth, while in the living dentine it should be brought as near to that point as possible, without risk of destroying the fibrills.

Dr. Wood. I found that most of my failures in setting crowns with gutta-percha resulted from the pin being too small in proportion to the canal. I now use as large

a pin as will allow for the necessary amount of gutta-percha to hold it. Before taking the impression I fit a piece of the pivot-wood into the root, as a gage, so that when the impression is removed the pivot comes away as part of it; and when the cast is made the pivot is withdrawn from the cast, giving the exact size and angle of the canal in the root. When practicable, I sometimes plug the apical foramen with pivot-wood; I take a stick of prepared wood and taper it so as to closely fit the extremity of the canal, leaving it free of the walls in the larger part of the canal, to facilitate its removal, should that be necessary. After dipping the point in creasote I force it to place—having previously cut it at the proper distance—and twist the but end off, so as not to interfere with the metal pin of the crown.

Dr. Essig. Fifteen years ago I used gutta-percha exclusively in setting pivot teeth, with good results as a rule, tho occasional failure occurred, in consequence of the gutta-percha being overheated in setting the tooth. The variable quality of the gutta-percha furnished by dealers will also prevent uniform results in its use. I have, therefore, long since abandoned it for oxyphosphate, which requires neither force nor heat in its application; and is, therefore, less likely to incite periostitis. It is inferior to gutta-percha only in the difficulty of removing the pin, when the porcelain tooth is broken away, necessitating the use of a fine fissure-drill to cut away the cement from around the gold or platina wire to obtain access to the canal.

The Setting of Porcelain and other Crowns.

DR. S. B. LUCKIE, IN PA. ODONTOLOGICAL SOCIETY.

THE Bonwill crowns are sufficient to meet the requirements in a large majority of cases, and their construction and method of attachment have been frequently explained by Dr. Bonwill. There are some additional points, however, which, I think, may well be considered. After the root is prepared, to prevent splitting it, a small groove should be cut around the canal, between it and the cement, which, when the pin is adjusted, the root filled, and the crown pressed to place, will solidly fill with amalgam and support the root on all sides.

If it is a root in the anterior of the mouth, the exhibition of a discolored joint may be prevented by placing a small quantity of light-colored gutta-percha, softened by heat, around the edge of the concavity of the crown, and at once adjusting the crown. A tight joint will thus be made, which will prevent the showing of the amalgam externally. Any excess of gutta-percha which may have been forced out should be trimmed off flush with the root and crown.

If a case presents where decay has progressed to such an extent as to leave only a funnel-shaped cavity, and but little substance for retaining the pin near the apex, a thin plantina band should be placed around the root, with a strip from it, to be turned and burnished into the cavity, to prevent the band from slipping beyond the edge of the gum. Then close the foramen, select a small probe—a Gates canal-drill with bur broken off answers well—and insert it in the root and pack amalgam around it; using either the Bonwill or the electric mallet to work the mercury well to the surface, removing the mercury with a piece of bibulous paper, and so manipulating the amalgam as to have it hard by the time the filling is completed. Then withdraw the probe; this leaves a canal that answers well as a guide in drilling. You now have a root almost as good as if it had not been injured by decay, and the operation can be continued after the usual method.

When the root is perforated in one or more places, I use a piece of plantina foil, cut into a shape that may be adapted to the walls of the canal, as a lining. For success in the use of these crowns, it is important that an amalgam of great strength be used; for, with inferior amalgam, the permanent building up of badly disintegrated roots is impossible. Low grades of amalgam are also subject to discoloration, which may be apparent through the porcelain, and they are therefore objectionable.

Experience has satisfied me that the attachment of these crowns to roots with

amalgam, and a pin whose surface will amalgamate, is the strongest method that can be used; and so great is my faith in it, that I take advantage of the mechanical principle in building contour fillings of amalgam in bicuspid and molars.

Sometimes the articulation will not allow a porcelain crown of sufficient strength to be used. The inferior lower and upper laterals frequently have roots so small as to prohibit the adoption of this method. For the roots of such teeth I prefer a platina and iridium pin for the canal. A gold collar is made to fit around the root and beveled on the labial surface beyond the free margin of the gum. A gold plate soldered on the beveled surface of the collar makes a cap for the end of the root. Adjust the cap on the root, select a suitable plain plate tooth and back it with gold, fitting it on the cap and attaching it with rosin and wax. Remove the tooth and cap; invest and unite with solder. After polishing the piece, attach it to the root with oxyphosphate of zinc.

For the roots of bicuspid and molars, a very permanent crown can be adjusted by making a cylinder of gold to fit the root, and allowing a filling of amalgam to extend from within the root through the cylinder; using a composition pin to strengthen the attachment.

Gold crowns can be adjusted in the same manner as the porcelain crowns, and a beautiful operation can be made, the amalgam being entirely hidden from view. A crown of this description is made by taking a ribbon of coin gold, number twenty-eight American gage, and forming it into a cylinder shaped at one end to fit closely the root. An articulating face is made by taking a piece of gold plate, wider than the diameter of the cylinder, and placing on it small, square pieces of gold, making pyramids according to the number of cusps required. The plate is held in the flame of a blow-pipe, to solder the pieces together and to the plate, using an eighteen-carat solder. Now flow a solder of a lower carat on the opposite side of the plate, place the cylinder on it, and again hold in the flame till the solder reflows. The excess of gold is cut off, the cusps filed to their proper shape, the crown polished and filled with a plastic.

After the plastic has become hard, concave the base, drill the number of holes needed through the crown to its articulating face, and countersink the holes. The crown is now ready to be attached to the root. If, when adjusting the crown, any difficulty is experienced on account of the pins not adapting themselves, the holes can be made larger with a bur. After the crown is adjusted, the amalgam on the articulating face can be cut away and gold filled in its place, making, to appearance, an all-gold crown.

If a root be even with the gum, the gold can be made to encircle it. This is done in a very accurate and quick manner, by placing a soft steel wire, No. 27, around the root, and twisting the ends together till tight; then, burnishing the wire into the irregularities of the surface of the root, removing it and placing it on a block of soft but tough wood, and striking it with a flat hammer. You now have the exact counterpart of that portion of the root you wish to place the gold around. Gold crowns made and adjusted in this manner require about two hours' time, and necessitate but one appointment with the patient.

When filling the upper ring of a flask—in repairing vulcanite work, it will generally be found that a large airhole is frequently formed in the plaster just poured in. This is caused by the plaster in the lower ring being dry, and the air escaping from it forms the airhole. To avoid this, after the case is invested in the lower part of the flask, trimmed, beveled and varnished ready for the investment of the upper ring, grease the whole surface and place it in a bowl of water while you mix the plaster for the upper ring. By this manipulation you will avoid what at times is very tantalizing in repair cases. The same procedure may be observed for new as well as repair cases.—*Ceupen, Dental Office and Laboratory.*

When Does Inflammation Indicate Extraction ?

BY JOHN B. WOOD, D.D.S.

THE observant dentist cannot fail to note that dentistry, as practised in the condemnation and extraction of teeth, is far from an exact science. While some practitioners extract too frequently, others take professional pride in preserving all teeth possible, even tho the conviction comes, at times, that there is too much tendency to sustain this conservative course, on the questionable ground of hope substituted for faith, when, oftener, justifiable conditions for extraction should be sought.

With some exceptions, hereafter noted, no reference will be made to the inflammation of the dental pulp from exposure. Precept and experience teach us that, in the treatment of such cases, a conservative practice should be adhered to; that, usually, no condition exists for the consideration of extraction, the most approved methods generally proving successful in preserving them. I shall, therefore, confine the subject to teeth that have passed from full vitality to that life still accorded by endosmosis, and to those of such low vitality or complete necrosis, when inflammation, notwithstanding our efforts for its reduction, becomes abiding and rampant; and we look about us in vain for other means for its reduction.

Under the head of supplementary conditions for the consideration of extraction, I would suggest the following :

Where constitutional conditions are unfavorable.

Where peculiarities of blood suggest specific inflammation.

Where the general system is low in tone, with acute nervous susceptibility.

Where, in child-bearing and child-nursing, the system is overtaxed and recuperation feeble.

Where the habits of the patient contra-indicate it.

Where adjoining teeth are in danger of being involved.

Where there will be a serious break in the continuity of the arch.

Where there are no occluding teeth to be injured.

Where mastication will not be seriously interfered with.

Where no embarrassment will result in articulating words.

Where the loss will not be conspicuous.

Where the loss can be replaced by adding to an artificial denture already in the mouth, or where such denture is desirable from other losses.

Where the loss will relieve an overcrowded arch, or where regulation will close the breach, and especially where, in a youthful mouth, the offending tooth is a first molar, and there is fair opportunity for moving forward of the second molar; in this latter connection, the consideration of extraction very often holds good where there is simple inflammation of the pulp.

Where there is inflammation of the nerves of deciduous teeth, and extraction will not be so premature as to cause future irregularity.

Where necrosed deciduous teeth, from non-absorption of their roots, may interfere with second dentition.

I have not presented all the considerations that might arise under the above head, and some of those mentioned may not have much weight; the first six, however, which might be placed under the head of predisposing causes, are so important that anything less than a paper devoted to the subject could not do them justice. I would not be understood as placing in the above category those cases which we diagnose, with considerable certainty, as the proper objects for preservation, but such only of apparent doubtful character.

When we consider the unspeakable agony and complete depression of the whole system, that is so often induced by dental inflammation, the query will arise, Would the profession, as a rule, submit to as much suffering for the cause of conservative

dentistry as they require of their patients? In the early days of dentistry and in the administration of anesthetics, when the conclusion was reached that a tooth was not worth the labor and pain necessary to save it, the operator was often uncertain whether the patient, with the marked degree of local inflammation and generally depressed condition of the system, could bear the necessary violence to the parts, or the shock to the system, necessary in extraction, without anesthesia. In fact, we may be embarrassed at this day, by similar circumstances; also, by the patient's fears of anesthesia, or by the necessary agent not being accessible, and especially on account of organic difficulty of the heart. Where this latter condition contra-indicates extraction, either with or without anesthesia, we are compelled to resort to slower means for the reduction of the inflammation than by removal of the cause; and my experience leads to the conviction that, for promptness of relief and improvement of the surrounding parts, next to the forcep, comes the leech, applied as often as the capillaries and lymph space become engorged with vitiated blood, as indicated by tension and pain, removing that which otherwise would have to be done by the slower process of absorption. But, should extraction become necessary in such cases, it would seem much safer to deal with a high state of nervous excitement, produced by consciousness of the operation, rather than an increased physical depression from anesthesia.

In ordinary cases, without anesthesia, extraction would hardly be considered dangerous, for, tho we may have extreme and protracted inflammation, resulting in very decided physical depression, the operation is so brief—the relief from bleeding of the parts under tension, so great—that reaction takes place almost immediately; so that the condition technically known as shock—which may be simply defined as mental depression, in connection with physical depression, from severe injury, and which, carried far enough, has a paralyzing effect on the heart's action—could hardly present itself in any considerable degree.

When a tooth is condemned, I believe it is generally best to extract at once, however severe the local conditions, rather than wait for a reduction of inflammation, as, where the cause remains, all methods of relief are but palliative, and nature's efforts at repair slow. Having removed the cause, the beneficial effect is plainly manifested in the improved spirits of the patient, nature usually responding with alacrity to restore the tone of the system and the normal condition of the parts. Should, however, the case be one where pus has gravitated and formed a sac in the tissues, or where splintering of the alveolar walls occurred in extraction, or where necrosed bone be present, the condition may be far from satisfactory. Rough and careless manipulation in extraction may also lead to some after-trouble by sloughing of the gums, but, usually, careful lancing, especially by splitting the gums, to provide against laceration when the forceps are pressed home, will prevent this. I would say, further, that, in extraction, especially with inflammation present, the agony of the patient is very much enhanced by the plunging and hauling process, too frequently adopted by those who rely on main strength to accomplish their purpose, and that the opportunity for the display of skilful manipulation is not so generally embraced as it might be. If, however, anesthesia can be resorted to, as, happily it so generally can, then we have not to consider extraction under excruciating circumstances, but to turn to the consideration of the best means for the purpose. Fortunately, science has advanced in the preparation and use of anesthetics, as in other directions, and we have to-day, in nitrous-oxide gas, an agent that meets the requirement of short operations with great advantage, that, tho profound in effect, it is quite evanescent, so that the patient, tho physically depressed from acute suffering, or the wasting of disease, may reasonably be expected to pass under its influence and out again, without meeting serious disturbance. Nevertheless, it is questionable whether the prolonged use of it is as safe as some other agent, from the fact that even a brief exhibition of it generally produces ashy pallor—the result of depression—and complete relaxation of the capillaries.

Persistent Headaches and How to Cure Them.

DR. JULIAN J. CHISOLM.

SCIENTIFIC truths disseminate themselves very slowly. The well-tried and thoroughly proven have to be often discussed, and are as frequently forgotten, before they take root. They then give evidences of the fruit which they should have earlier borne. In this category is placed the medical and now well-established fact, that among the many causes of the most persistent headaches, eye faults are perhaps the most common. As a rule, they are the *last* to be recognized.

Headache is acknowledged to be one of the most constant effects of systemic disturbances. It is present in all of the acute inflammatory diseases, and in most of the chronic ones. When any of the important organs of the body get out of order, the head suffers. The brain, the heart, the stomach, the liver, the kidneys, the uterus, all of them can produce headache. We know with what readiness the emptying of an impacted bowel will clear up head discomforts. *The mistake made is to believe these the exclusive causes of headache.*

It is a safe rule for a physician to follow; to look to the eyes as a common cause of head disturbances when the frequent headaches of a patient are not produced by some tangible disease. As a cause of headaches, eye troubles should be suspected before malaria, neuralgia, biliousness, dyspepsia, and such commonly attributed, but obscure, sources of disorders; and this even when the patient's painful head symptoms temporarily yield to quinine, iron, arsenic, caffeine, a blue pill, or soda mint.

Unfortunately, when the fault in the eye is paining the head, and is secondarily disturbing the whole body, the eye itself does not necessarily take on a conspicuous congestion. It is not even always painful; so that the casual observer can see in it no cause for trouble. Many persons know that under the continued use of the eyes the head aches, but the seat of pain need not necessarily be in the eyes themselves. Fortunately, in the majority of cases, it is the pain in the eye that precedes the pain in the head. If this sequence always existed there would be less trouble in making a correct diagnosis. A very misleading fact with pain-making eyes is that often vision is apparently perfect. Persons will remark that they can see as far as any one, in evidence that their eyes cannot be the seat of the disturbance. They do not appreciate that sharp vision is one thing, *easy* as contrasted with *labored* vision quite another. They cannot distinguish between the work done and the exertion needful in its accomplishment till the accumulation of extra effort induces pain.

Some patients will give as the history of their troubles, this: Up to a given time they had, as they supposed, the strongest of eyes. They overworked them, and now they will stand no continuous work. A book-keeper properly attributes his annoyance to over night-work in getting his books up. A school-teacher found the eyes painful after the examination of an extra number of exercises. A lady had no eye-pains till she forced them on fine embroidery for Christmas gifts. A school-boy traces his eye and headaches to over ambition in preparing for an examination. A student, who has unavoidably lost time, decided to keep up with his class by doing back-work in addition to the day's requirement; and to effect this, had to drive his eyes for more hours of the twenty-four than prudence allows. With them all, since the first break-down in their eye-sight, a very few minutes of reading, writing or sewing causes the eyes to water, and burn, and produces a brow stricture with eye-pains. Now, the head is only comfortable when the eyes are at rest. If eye-work is persisted in the pain extends to the temples, then to the top of the head, and even to the back of the neck. Some refer all the pains to the top of the head, while the back of the head and the neck annoys others the most. In a few, even the stomach becomes upset, and nausea follows, not because the liver or the brain is diseased, but as reflecting disturbances from over-taxed eye muscles. One of my patients complained of a peculiar sensation of constriction over the heart, which

accompanied the eye and headaches. As he could bring on this very disagreeable chest-pain by reading, and no chest disease could be found on the most careful examination, the reflex association from the eye to the heart-nerves could be clearly traced.

Nature does wonderful work. The function of any organ is a marvel far beyond our comprehension, and the eye is one of the most intricate parts of the body. While we are lost in admiration over its wonderful mechanism, as an optical instrument, we are aware also of some of its imperfections. We find many human eyes far from perfect. In communities advanced in civilization a perfect eye is rather the exception. Nature may start them right, as is seen among the wild tribes, who have exceptionally good eyes, but no education. School abuses soon upset them. *Near-sightedness is becoming too common an eye trouble, and has as its fruitful source the present forced education of the very young.* In these days there is no play time for children. Lessons in school, and studies out of school, absorb more than the daylight hours. Brain work is known to be more exhausting than hand work, and young eyes cannot submit to this constant application without injury.

There is a society protecting children from cruel treatment. It prohibits their employment in factories. *The factories which should head the list as most abusive to their general well-being are the schools as they are now conducted.*

The average citizen restricts his idea of muscular labor to the hands alone, not knowing that eye-work is a perpetual muscular labor, and of a very fatiguing character. When a person is reading, sewing, or writing, the small but all-important eye muscles are as hard at work, in their way, as the arm muscles would be in sawing wood, or lifting heavy weights. These eye muscles are as capable of being fatigued, and, when fatigued, of causing pain. This pain need not be restricted to the overworked muscles themselves. They draw into nervous sympathy contiguous parts of the body, and cause the so-called neuralgia of the head. An extremely common expression, daily received from patients, is that they have so much neuralgia that it makes their eyes pain them. When explained properly it means they have so much eye strain that it makes neuralgia in the head, and then pain in the eyes.

All eye faults (and we use this term as distinct from eye diseases) do not cause headache. By eye faults I mean a faulty form of the eye-ball, a deviation from the perfect type, by which easy focusing of the crystalline lens to form clear pictures on the retina is interfered with. Good sight means an eye which can make sharply defined pictures on the retina for brain interpretation. If this be done without effort the machinery runs smoothly and without discomfort, even if kept up by the hour, or by the day. There is a large class of clear, perfect-looking eyes, with apparently excellent sight, which give way under the continued use our every-day affairs demand. These eyes would never show their faults were they not pressed by continuous labor. This fault resembles a flaw in the wheel of a railroad car, which can, and has, run for many years at a thirty-mile rate, and seems as good as the best, but when driven at a sixty-mile speed goes to pieces. The trouble with such eyes began when additional work was put on them, and they have given trouble ever since.

The true headache eye is known as an *astigmatic* one, from the Greek word *astigma*, not a point, which means that a point of concentrated light is not being clearly made on the retina by the focusing apparatus. This astigmatism is usually a fault in the cornea, tho it may be more rarely produced in the crystalline lens, or might even be from irregularities in the surface of the retina itself. It disturbs the making of sharp retinal pictures, and, to effect a designed purpose, demands on the part of the eye muscles more work than nature intended. Should we simulate the cornea to the glass which covers the face of a watch, we can readily understand how the glass may be so squeezed out of shape by lateral pressure as not to fit the perfect rim into which it should adjust itself. In examining such a faulty

watch-glass we will find the curvatures are not uniform in all directions ; also, that in the direction of the pressed edges the curvature is greater than the opposite or true surface of the watch-glass. The cornea is in a similar manner distorted into astigmatism. When the two meridians of curvature at right angles to each other are taken, they are not found uniform. They should, in good eyes, represent curved surfaces, all of which are made by one radius. Unfortunately, in astigmatism there is a different radius for each of the two curved surfaces.

The first law of optics makes the curvatures of a transparent surface responsible for the focal strength or condensing powers of such a surface. When in an eye these corneal surfaces all correspond, light passing through them on its way to the retina is bent uniformly toward one point, which is called the focus. That brings out on the retina a sharp picture made up of microscopic points of light. If, however, these corneal surfaces are not uniform, the parts corresponding to these varied curvatures, each acting as a lens, will produce two foci of light. Both of these foci cannot be on the same screen at the same time. The perfect part of the cornea will make its image in bright, luminous points on the retina as on a screen. The imperfect part in unfocused luminous rings will cast a shadow over the brighter points, and will variably blur them. Then comes intuitively an effort on the part of the eye muscles to correct the faulty focusing and make the whole picture bright. This is an unusual muscular act, and has to be repeated for every picture that is made on the retina.

It is easy to calculate how many of these distinct pictures are made in reading or writing, as nearly every letter must have its own and exclusive photographic impression. The brain must register this impression before it is effaced, so that the retina may be made ready for the succeeding letter. To those who have never tried the experiment, it is startling to discover how small a part of a word we clearly see. Shut one eye and look at a word containing six letters. To see them all sharply, you will find the eye moving from one side of the word to the other, proving that the six small letters cannot all be focused sharply simultaneously.

When a well-shaped eye adapts itself for reading, there is, as it were, a steady contraction of the accommodating muscles, a very easy condition to sustain, even for long periods. With an astigmatic eye a new adjustment of the muscular apparatus has to be made for every picture ; a species of perpetual motion, which cannot avoid producing fatigue and consequent pain, both in the eyes and in the head. Each surface has to be separately focused by the eye muscles on the retina, because the two cannot be focused together. To keep the elasticity of the lens in a perpetual state of activity, focusing first for one corneal meridian, and then for the other, demands incessant activity of the intra-ocular muscles. This tax is especially demanded when the eye is exercised in near work, the more especially under bad illumination. For an astigmatic eye all work is an effort, and night work by artificial light is especially fatiguing and painful.

The work of the ciliary muscle in astigmatic eyes may be likened to the irregular squeezing of an object by the hand. A well-shaped cornea focuses all light passing into the eye by one movement, just as the hand seizes and holds an object by the uniform pressure of all the fingers. No fatigue ensues on this simple muscular activity. If, however, the fingers do not all clasp simultaneously the object, the thumb and second fingers at one time, to be followed by the remaining fingers in succession, these groups relaxing and contracting at the rate of many times a minute, fatigue must result. If these irregular muscular hand movements were persisted in, pain would be felt in the fingers, and, extending up the arm, would cause an aching of the whole limb.

The source of sensation for the intra-ocular eye muscles is from branches of the fifth cranial nerve, the great nerve of sensation for the whole head. It is a law of the human economy that when one branch of a sensitive nerve is excited all the branches might exhibit sympathetic irritation. From the anatomical distribution of the

ophthalmic branch of the fifth nerve to all parts of the scalp we must expect these so-called neuralgic pains to accompany eye irritations; therefore the irregular actions of the eye muscles in astigmatic eyes, being a common cause of local irritations, must be one of the fruitful sources of head disturbances. Then, will also come into play nerve reflexes, intricate and far-spreading, and not restricted to the head alone. Some patients complain of dizziness, giddiness, and irregularity in walking. Others of heart irritation, chest constriction, and of nausea. With a few the eyelids are constantly twitching or the face muscles indicate irregular movements. These various symptoms come on as the immediate sequel of eye work. With the very sensitive these uncomfortable results appear when the eyes have been used for only a short time; with others only after long and continuous application. When, however, the eyes finally break down, the irritability persists even when no close eye work is done. Reading, for even a very few minutes, causes pain. The eyes become sensitive to light, and persistent headache results. The irritation excited through the little use of the eye during the day may last through the night, so that the patient is never freed from head disturbance. With some, these headaches are so constant from the ordinary uses to which the eyes are put, no eye congestion accompanying them, that it is not surprising that the diagnosis is obscure, and that physicians are led astray. I daily see such cases. They report themselves the victims of perpetual neuralgia, or of malarial saturation, or of brain troubles, because the head aches so; or they believe themselves dyspeptic and bilious because of frequent nausea. With few exceptions they have had years of medical treatment, with only temporary relief when the eyes were rested.

For such headaches, and they are very common, there are but two remedies. The natural remedy is to abandon all use of the eyes, and by so doing not excite the irregular fatiguing muscular contractions which the use of astigmatic eyes demands. Simple and effective as this restful idleness is, it is impossible of application. No one in these busy days can make this sacrifice of doing nothing. The only remedy then left is to correct the excessive and irregular action of the interior eye muscles. This is accomplished by the use of cylinder glasses. When carefully selected, properly mounted and constantly worn, at least for near work, they make all the corneal curvatures act as if uniform in their focusing power, and the function of seeing becomes easy.

By wearing proper glasses the eye machinery runs smoothly, and headaches of years continuous disappear. A hypodermic injection of morphia cannot more promptly check pain than does sometimes the putting on of proper glasses relieve headache. Relief is often immediate with the putting on of cylindrical spectacles, and it becomes permanent under their continued use. Often, during the first consultation, when the proper glasses are placed before the eyes for even a few minutes, patients remark *how restful the trial glasses make the head*, and how the old sensations of discomfort come back the moment the glasses are removed. This is a sure indication that glasses are needed.

Quite recently an intelligent lady, aged 26 years, from a distant city, could not for years recall a single day's freedom from headache. Very often she had to seek comfort in bed, in a dark room. Her case was one of irregular near sightedness, or, as it is termed "myopic astigmatism." When the proper glasses were adjusted the beauty and comfort of seeing was a revelation to her, which she expressed by face as well as words. She wore the glasses prescribed, and for the first time in her remembrance enjoyed the comfort of freedom from pain. The giddiness in her case had been so annoying and her gait so unsteady at times that she found no pleasure in walking. With the correction of the eye irregularity came a steadiness of tread delightful to enjoy. I found that the nose-bridge of her spectacle frame was a little too narrow, and suggested that the optician open it a little. For three days she had been leading, as she said, a life of luxury, going where she pleased, reading all she wanted, and with perfect bodily comfort. At my suggestion she visited the optician

to have the frames properly bent. Awaiting the correction of the frames in the store, she was forced to go without her spectacles for ten minutes, and her headache returned. As she said to me: "You may imagine my anxiety to get my glasses back, and how I enjoyed them from the moment I put them on."

There are thousands of young persons who are impatiently resting their eyes for weeks and months at a time, under bad medical advice. Some are kept from school, a serious break in their education. Others can ill spare the time lost from their various pressing occupations. All are taking physic to enable them to escape from annoying headaches which come on whenever they apply themselves. These numerous, long-suffering, and much abused patients need some one to suggest to them the well-established fact that, tho the eyes do not visibly inflame, they are a common cause of head discomforts, and that this is calling for recognition. — *Cincinnati Medical Journal*.

Caries.

DR. T. FILLEBROWN, IN HIS OPERATIVE DENTISTRY.

SOME believe that the color of the disintegrating tissue depends mostly on the kind of acid which has acted on it. Three kinds of caries are described; first, black, caused by sulphuric acid. This is not as frequent as the other varieties. Its progress is very slow in all cases, the blackened tissue remaining quite hard, and often it is spontaneously arrested.

Second, brown decay, the result of the action of hydrochloric acid, which destroys the lime salts of the tooth, leaving the organic portion of a brown color, and elastic, leathery consistence. This progresses more rapidly than the preceding, and it is seldom arrested spontaneously.

Third, white decay, produced by nitric acid, which rapidly destroys both the mineral and the organic constituents of the tooth, so that they are readily washed away, the cavity being usually filled with extraneous matter.

Recent researches by Dr. Miller seem to show lactic acid to be the principal agent in the production of caries.

In practice, tissue that has been partially or wholly decalcified will be found of all possible variations of color and consistency; these variations being the effect of the combined action of the destructive agencies, or of other conditions, as length of time, quality of the tooth-substance, condition of the mouth or habits of the individual.

As caries progresses, the cavity assumes one of two general forms, becoming either broad and shallow, with no well defined walls or orifice, or else narrow and penetrating, enlarging within the dentine and extending toward the pulp, while the opening in the enamel remains comparatively small.

Some surfaces of the teeth are specially liable to be attacked by caries, this liability, in each case, depending mostly on the form of the tooth and its relation to other teeth.

Of the incisors and cuspids, the proximal surfaces are the most frequently affected, and next the labial surface at the margin of the gum. If a pit exists on the palatal surface this is frequently the seat of caries.

The bicuspsids are also most frequently attacked on the proximal surfaces; secondly, in the pits or fissures on the grinding surface; and, thirdly, the buccal surfaces at the margin of the gum.

The molars decay most frequently in the fissures of the grinding surface; secondly, on the proximal surfaces; and, thirdly, on the buccal, in the pit on this surface, or at the gum margin, and, lastly, on the lingual surfaces.

Decay on any point of the surface of a tooth may result from defective structure or from special causes.

The tooth most subject to decay is the lower first molar of either side, and next to this the upper first molar. The lower incisors and cuspids are the least liable to decay.

Plastic Fillings.

EXTRACTS FROM DR. FILLEBROWN'S OPERATIVE DENTISTRY.

A MALGAM, oxychloride of zinc, oxyphosphate of zinc, and gutta-percha are the plastic fillings now used.

Amalgam is the only plastic metal filling. It is compatible with tooth substance, consequently tooth-saving. It has comparatively low conducting power, hence it is less likely than gold to produce inflammation of the pulp; it is easily introduced into the cavity, hence it is applicable in places difficult of access and in cavities with frail walls. Careful preparation and thorough packing will greatly modify, if not entirely overcome, the shrinkage and the tendency to assume the spherical form, and will add greatly to its preserving qualities, and nice polishing and burnishing will improve the color.

The best amalgam is fine-grained, plastic-working, sets quickly, has good edge strength, sufficient hardness to resist wear, and density to take a good polish.

To prepare an amalgam filling, place a sufficient quantity of the filings in a small wedgewood or ground glass mortar, or in the palm of the hand, add mercury, and rub them thoroughly together with the pestle, or with the finger; add, if necessary, a little more of the filings to harden, or mercury to soften. The paste should be soft enough to cohere when pressed, but hard enough so that mercury may not be expressed by pressure between the thumb and finger. A little practice will enable one to judge correctly.

Have the cavity dry and protected from moisture, insert the filling in small pieces, placing it in perfect contact with all parts of the walls of the cavity by rubbing and gently tapping with the plugger, exercising the same care as with a gold filling, especially at the cervical wall and in undercuts. The tapping process condenses amalgam with remarkable facility and thoroughness.

Amalgam may be very thoroughly and satisfactorily packed by inserting enough to half fill the cavity, covering with a layer or a pellet of cotton or bibulous paper, and rotating the burnisher on this with pressure, either with the engine or with a hand burnisher. Then add more amalgam, and repeat the burnishing till the cavity is filled.

Remove surplus, and burnish toward the edges till it has begun to set, then leave it, and at a subsequent sitting dress down and polish.

Amalgam was formerly washed in alcohol or solution of bicarbonate of soda, but at present this is not in favor, and it is thought it injures it. This is questionable.

GUTTA-PERCHA.

Gutta-percha for filling is used combined with oxide of zinc, and was first known as Hill's stopping, and since by many other names. It is useful for temporary fillings, for root fillings, and for cavities with frail walls or if near the gum. In some instances it lasts a long time, ten years or more, but when exposed to wear it is soon destroyed, and some preparations of it are softened by the secretions.

It is best used by cutting in small pieces, laying them on a warm slab of porcelain or tile till soft, and inserting one piece at a time till the cavity is full. Each piece should be warm enough to stick to the walls or to the portion already inserted, and thus make a homogeneous filling.

A coating of resin dissolved in ether applied to the walls of the cavity will cause the gutta-percha to adhere firmly. Chloroform or oil of cajeput on the burnishers will soften the surface and aid in finishing.

CEMENTS.

Oxychloride of zinc is useful for root fillings and for partially filling cavities in crowns of teeth, to whiten them. It is the lightest colored cement made. It is not serviceable for exposed fillings, tho in a few exceptional cases it has lasted seventeen to twenty years.

Mix the liquid and powder on a palet to the consistency of thick paste and insert in the cavity. Wait for it to harden, and finish at the same sitting.

Oxyphosphate of zinc is phosphoric acid and calcined oxide of zinc. This has almost entirely superseded the oxychloride of zinc for exposed fillings, as it is much more durable.

Mix with flexible spatula, on a slab (a glazed tile four inches square), the acid and powder to the consistency of soft putty, working in the powder thoroughly, a little at a time, rubbing well with the spatula till it works smooth, and continuing the working till used, as it begins to set immediately on being allowed to rest. Insert quickly in convenient portions, and insure perfect contact with the walls of the cavity, which should be perfectly dry. Dress off the surplus with a thin cutting instrument, well oiled, then burnish slightly toward the edge with oiled burnisher. Do not burnish hard enough to move the body of the filling after it has begun to set, as it breaks up the crystallization. The filling should be kept dry from fifteen to thirty minutes. It is well to cover it with gutta-percha dissolved in chloroform, and allow it to remain to protect from moisture till it is fully hardened. When making permanent fillings it is better to use the rubber dam.

A good oxyphosphate of zinc filling may be expected to last from one year to five years.

The cervical wall may be protected with gutta-percha amalgam or tin filling, and the cavity then filled with the cement, and thus be made more durable.

For use as temporary fillings the cement may be mixt much thinner and used quickly, and not kept dry. Such fillings may be cut out quite quickly.

A temperature of about 70° F. is the most favorable for mixing cements.

Teaching Prosthetic Dentistry.

PROF. L. P. HASKELL, CHICAGO.

THERE is too much of didactic and far too little of technical teaching. More time should be devoted to the latter, even at a sacrifice of a portion of the time now spent on anatomy, chemistry, and kindred sciences. There should be more attention paid to metal work and less to rubber. The classes should be smaller or more demonstrators provided, or, as I will state further on, a more radical change still.

I have long realized the necessity for this change, but it has been greatly emphasized by the number of letters of inquiry in regard to the Post-Graduate School from graduates of the various colleges, who complain of the inadequate instruction they have received in this department. These complaints do not come from the class of students in colleges who avoided, as far as possible, the laboratory, while in college, but from those who were anxious to learn as much as possible.

The lecturer should have a well-defined theory and method, and be able to condense theory into the smallest possible amount of words. He should receive a salary sufficient to enable him to go into the laboratory and fully demonstrate his methods, and have competent demonstrators who are familiar with *his* methods.

The *large classes* are unfortunate for the student who is anxious to learn. Five hundred students can listen to a lecture as well as one; but in the laboratory the chances of twenty-five are far better than a hundred.

To secure more practical work in metal plates, a large portion of the partial sets should be made of silver alloyed with platina. The cost is but a trifle more than rubber. By this means the student gets experience in swaging, fitting, adjusting clasps, grinding on teeth, investing, backing and soldering. Full plates can be made on aluminum instead of rubber. When this is done, the professor can, with better grace and truthfulness, sign the diploma which announces that the graduate is qualified to *practice* dentistry.—*The Ohio Journal*.

A Two-rooted Lower Cuspid is sent us by Dr. T. F. Woodbridge, of Mendota, Ill.

Working Steel.

VERY often an instrument of peculiar form is needed for a special case. It is, therefore, very important that every operator should be able to make such instruments as necessity requires, and the following directions will enable him to do so :

A worn excavator is the ever-ready material for this purpose. Heat to a cherry red, and hammer it on the anvil toward the form desired only as long as it will yield easily. Repeat the heating and hammering till the desired form is obtained. Heating hotter than a cherry red, or hammering when cool injures the steel. Bend the point to the form desired and reduce to proper size ; form the edge by filing and grinding. Smooth and polish with emery, stone, pumice and rouge ; the instrument is then ready for the process of hardening and tempering.

To obtain the proper temper for a good cutting edge, the instrument must first be heated to a bright red heat, and suddenly cooled by plunging into cold water or other cold liquid. This will give to the steel a silvery whiteness, and render it so hard that a sharp corner will easily scratch glass ; this should be the test of the hardening. Make the part to be tempered clean and bright with fine emery or by other means ; heat the instrument slowly, well up on the shank, and allow the heat gradually to approach the point ; the blue and straw colors will be seen to run down on the shank as the heat progresses. There will be all the shades of blue, from very dark to very light, and joined to this a dark straw color, which will terminate in a very light straw.

The dark blue represents a soft steel ; the medium and light blue a spring temper ; the dark straw shows a soft cutting edge, and the pale straw a very hard cutting edge.

A thick edge will bear a much harder temper without breaking than a thin edge, consequently the thick edge may be left a very pale straw, while the thin edge must be a little darker.

For drawing the temper of small instruments, the flame of the annealing lamp is sufficient. For hardening, a greater heat is required.

The shank of the instrument should be of spring temper, and some practice will be necessary to obtain a good spring temper throughout the length of the shank, and avoid reducing it too low in some places.

A weak solution of sulphuric acid will, in a few moments, remove from the instrument all of the coloring caused by tempering.—DR. T. FILLBROWN.

Killing Pulps in Temporary Teeth.—I would suggest a discussion of the comparative results of the devitalizing of the pulps of deciduous teeth and filling the pulp chambers, and the common one of leaving that chamber unfilled and then drilling an opening into the chamber at the neck of the tooth.

It has been my experience that the latter practice is followed by much greater subsequent disturbances than the former, the different inflammatory conditions which arise involving a considerable part of the gum, that structure assuming, in some instances, the appearances akin to purpura. This appears to be due to the artificial fistula permitting a free entrance into the chamber of various substances capable of fermentation, as well as directly septic influences. By the former method, the irritation is less, because there is no receptacle for foreign matter and few secretions, and should a fistula become established, the sides of it are in contact in such a manner as to prevent ingress of foreign influences. So great is the difference of these two methods in my hands that I have ceased to drill these teeth.

To destroy the pulp of temporary teeth, I bare this part and, with a very fine broach, prick a small quantity of the arsenical paste into the surface. This can be done with a light hand without giving pain, as the pulp of these teeth is not sensitive to touch unless pressed on. In three or four days the devitalization is usually complete.—Dr. Jack, *in Pa. Odon. So.*

The Lawler Resolution on Improved Spelling.

MR. LAWLER is a member of Congress, and if his resolution is sustained by other members, a most needed mending of our inconsistent spelling will be commenced where, as a precedent, it will have a general following. It is rationally believed that proper pruning of our tedious orthography will lessen the labor of acquiring an education by much more than one-half, and prevent a constant relearning of forgotten crooks.

Many nations like the spoken English, but its difficult spelling prevents its adoption. The proposed action is as follows:

Resolved, by the House of Representatives (the Senate concurring), That the Public Printer be, and is hereby, directed in all works for Congress and for the Departments begun after the passage of this resolution, to adopt the following rules for amended spellings, except in educational and other works where a different orthography may be required.

First. Drop *ue* at the end of words like *dialogue*, *catalogue*, etc., where the preceding vowel is short. Thus spell *demagog*, *epilog*, *synagog*, etc. When the preceding vowel is long, as in *prorogue*, *vogue*, *disembogue*, retain final letters as at present.

Second. Drop final *e* in such words as *definite*, *infinite*, *favorite*, etc., when the preceding vowel is short. Thus spell *opposit*, *preterit*, *hypocrit*, *requisit*, etc. When the preceding vowel is long as in *polite*, *finite*, *unite*, etc., retain present forms unchanged.

Third. Drop final *te* in words like *quartette*, *coquette*, *cigarette*, etc. Thus spell *cigaret*, *roset*, *epaulet*, *vedet*, *gazet*, etc.

Fourth. Drop final *me* in words like *programme*. Thus spell *program*, *oriflam*, *gram*, etc.

Fifth. Change *ph* to *f* in words like *phantom*, *telegraph*, *phase*, etc. Thus spell *alfabet*, *paragraf*, *filosofy*, *fonetic*, *fotograf*, etc.

Sixth. Substitute *e* for the diphthongs *æ* and *œ* when they have the sound of that letter. Thus spell *eolian*, *esthetic*, *diarrhea*, *subpena*, *esofagus*, *athenum*, etc.

N. B. No change in proper names.

Copies of the Lawler Resolution, prepared for signatures, to be sent to the signer's Member of Congress; and also copies of the Anglo-American Alphabet, can be obtained by sending a stamp to the Spelling Reform Rooms, 24 Clinton Place, New York.

What is the Best Method of Permanently Filling Pulp-Canals?

IF root-canals are properly prepared and filled, there will be no future disease. The question is, How shall it be done with gutta-percha and oxychloride of zinc? Excellent root-fillings can, and often are, made with gold foil, tin foil, and amalgams; but in many ways these materials are inferior to the two first mentioned, and in no respect are they superior. As for cotton as a permanent root-filling, we cannot conceive a decent reason for its use, except as a vehicle for the introduction of the oxychloride. Of the two materials, oxychloride and gutta-percha, we give preference to the former, for two reasons: first, because the union between the materials and dentine is perfect; and second, because it cauterizes and makes fixed material of the organic matter which may remain in the canal and in the dentinal tubes; it also makes a better foundation for the gold to be introduced than gutta-percha does. On the other hand, it is objectionable on account of the fact that it may be forced through the apical foramen; therefore the foramen should first be securely closed with a small point of gutta-percha, or a small amount of thick chloro-percha, when it is impossible, on account of small canals, to use the warmed solid material. This, we think, is the best way to perform the operation, in the light of past experience among the most careful operators.

When gutta-percha is used for the entire filling, and the operation is commenced with chloro-percha, care must be taken that the solution is not very thin, because of the shrinkage on evaporation of the chloroform. If difficulty is experienced in certainly getting the material to the apex, introduce first a shred of cotton moistened in chloroform alone; and the gutta-percha, quickly introduced, will then surely be

conducted to the extreme point which has been moistened. Use the chloro-percha only as a starting procedure, and fill with solid points and pellets, pressing firmly, that no considerable amount of chloro-percha will remain. After evaporation has proceeded, press again to insure solidity.

We hear much about the leakage of gutta-percha; but a root-filling inserted as we have described will not, we believe, leak, unless there has been enlargement at the apex, so that a good closure is impossible. However, to avoid any possibility of risk, we incline to confine the use of gutta-percha to the immediate vicinity of the apex, then filling the canal with oxychloride of zinc as before described. By this method the canal is perfectly closed with the imperishable compatible material, and the result will show better success than can be obtained by any other method now known to dental surgery.—Editorial, *Western Dental Journal*.

The Dentist and His Surroundings.

DR. T. FILLEBROWN, IN HIS OPERATIVE DENTISTRY.

THE appearance of the operator and his treatment of the patient are very important, and largely promote or hinder his success.

Remember, "Order is Heaven's first law," and "Cleanliness is next to godliness."

Be master of yourself. Control your temper under all circumstances. Be kind and sympathetic, but firm and self-respecting; dignified, but not distant, and tolerant of human weakness, both mental and physical.

The operating-room should be neat, orderly, well-lighted and airy.

The north gives the steadiest and clearest light; the southerly aspect is the most healthful, while the western sky affords the longest day.

When operating by direct sunlight, a white Holland shade will so soften the light as to make it agreeable, and yet it remains effective. If the shade is placed outside the window, it affords circulation of air between it and the window, and thus keeps the heat from the room. A white awning serves the same purpose, but shuts out more light.

The operating case should be conveniently placed, and of sufficient size to allow of a convenient arrangement of the instruments, each instrument or class of instruments in its place.

Every instrument should be kept clean, free from rust and well polished.

Observe scrupulous cleanliness about the spittoon. Wash frequently, deodorize and disinfect. A weak solution of sulphate of copper is an inexpensive and effective disinfectant. Other excellent disinfectants are Platt's chlorides or permanganate of potash.

Give careful attention to personal cleanliness, especially the hands. Wash them frequently, using the best toilet soap. Keep the nails pared short and scraped clean. When a grimy, rough or chapt condition of the hands obtains, give them a thorough washing in soft water, with the free use of carbonate of soda; partially dry the hands, and apply glycerine and rose-water, rubbing well; then rinse in clear, cold water and wipe dry. This leaves the hands perfectly clean and soft, and promotes healing.

For Pyorrhea.—Two of the most useful preparations I have found for the treatment of pyorrhea, have been boracic acid and aromatic sulphuric acid. The first process in the treatment is to thoroughly cleanse all the roots with a very fine, slightly curved instrument, then to thoroughly syringe out the pockets with aromatic sulphuric acid diluted with one part of distilled water, and let the patient use night and morning a powder composed of one dram of boracic acid and one ounce of precipitated chalk. To this treatment the disease succumbs very readily.—*Dr. Genese*.

Treatment of Pyorrhea Alveolaris and Similar Tissue Alteration.

CHAS. B. ATKINSON, D.D.S., NEW YORK.

THE varying conditions of the tissues must be the daily guide for their treatment. A *general* statement of treatment may be as follows: When the tissue is dark, blue in color, swelled and soft, lancing, to relieve the venous congestion, and the injection of aromatic sulphuric acid of the full official strength are indicated.

Where it is evident suppuration is present, hydrogen peroxide and caustic paste (potassa fusa two-thirds and acid carbollic crystals one-third) are indicated. Here let it be said hydrogen peroxide when properly made is harmless to the tissues. There is plenty of commercial hydrogen peroxide containing excessive quantities of acid, therefore care should be exercised to procure such only as is especially prepared for medicinal use. It is this preparation that is specifically recommended. To resume: When the tissue assumes a cherry red color, salicylic acid solution saturated in alcohol is indicated. When a warm pink color shows with or without a speckled appearance (one evidence of fresh granulation), a saturated solution of tannin in glycerine is indicated. It is also advisable to have recourse to constant exhibition of antiseptic and stimulating mouth-washes, and insist on their faithful daily use, especially on rising and retiring.

Solution of hydrarg. bichlor. 1 to 500 solution, a saturated solution of hydro. naphthol in water, and hydrogen peroxide represent washes which may be flavored advantageously with tinctura calendula, 3ss to each ounce of solution, and used largely, especially the latter two.

Each case necessarily presents its own features of alteration and alternation, and the foregoing is advanced as a general statement of conditions and treatment which have been uniformly *successful*, irrespective of theories of, or experiments in chemical action on tissue separated from its vital connection.

Many conditions of inflammation soon reach a stage of restoration where simple syringing or spraying with hydro-naphthol solution fulfils all the requirement for aid to nature's efforts.

The above deals with *local* manifestations, and reference only is made to systemic indications.—*British Journal of Dental Science*.

Excessive After-Hemorrhage in Extraction of Teeth.

THE notes on "Excessive Hemorrhage After the Extraction of Teeth," by Dr. C. H. M. Neal, and Dr. T. D. Dunn, in the May ITEMS, has led me to write the following:

Friday forenoon, May 14th, a middle-aged widow called at my office to have all her teeth extracted, twenty-eight in number.

I administered vitalized air, and removed all the teeth from the upper jaw.

Thinking this would be as many as she could bear in one day, I refused to extract any in the lower jaw.

The bleeding soon ceased, and the lady left the office, leaving her name and address. About five o'clock in the evening, I was sent for to come to her home, and found her very pale and quite weak from loss of blood. She told me her gums had commenced to bleed soon after leaving the office, bleeding all day.

The peculiar part of it was that they were only bleeding from the right side. She informed me she always had trouble of this kind after having teeth extracted, and also that she never had excessive hemorrhage from any other part of the body. I plugged the cavities on the right side with a solution of tannic acid and Monrel's powder, but it was five hours before the hemorrhage ceased.

The next afternoon, to my surprise, on removing some of the cotton, the hemorrhage started again. I soon had it under control, however, by having her wash her mouth with Monrel's powder in water.

J. E. FITZGERALD.

Setting a Broken Jaw.

EDITOR ITEMS:—The **ITEMS OF INTEREST** for May contains an account of uniting a broken jaw by Dr. Harland. This reminds me of an interesting case of compound fracture of the lower jaw in my own practice, that occurred during the dark days of "Reconstruction in the State of Missouri." A white man, in company with some friends, went to a negro meeting ostensibly to hear them sing; but the negroes did not want them around, and attempted to drive them off. In the mêlée one of the white men received a blow with a club which broke his lower jaw in two places—on the left side between the first bicuspid and cuspid, and on the right side between the first and second molars—both of the fractures being complete, thus dividing the bone into three distinct pieces. Three physicians were called in to set it; but, after laboring two days with ligatures and every conceivable appliance in their reach, gave it up. After consultation, they determined to call in a dentist, when I was sent for. When I arrived, the parts were suppurating, and the patient was suffering exceedingly. My first act was to obtain an impression of the lower jaw and teeth, the different pieces being held in their normal position while the impression was being taken (fortunately the patient had a good set of teeth in the lower jaw). This I effected by the use of gutta-percha in a mouth cup, prepared for the purpose, and made a very correct plaster model of the normal position of the lower jaw, on which I vulcanized a rubber splint. This I put over the teeth, extending to the right and left beyond the fractures, making it in front sufficiently thick to cut a space large enough to insert the point of a spoon, through which opening the patient was fed on soup and gruel till the fractures united. This splint was applied, and the mouth closed on it. The fractures were immediately set, and bandages were applied under the chin to the top of the head. In ten days the bone had completely united, leaving no trace visible of the fractures.

JNO. L. DOGGETT.

Bedford City, Va.

Instructions for Making Instruments from Piano-wire for the Removal of the Contents of Pulp Canals.—The very best quality of piano-wire of No. 20 or No. 22 standard wire or plate gage should be used.

It should be cut into lengths of three inches, and should then be filed down to the required size and taper. The wire should commence to taper at one and one-half inches from the point, while the last half inch should be of nearly uniform size.

When the wire is reduced to the required size, the hook is to be formed by placing the wire on an anvil, or other smooth, hard surface, and holding the smooth edge of a thin knife-blade on it, near the end of the wire, when the wire is to be drawn up sharply and tightly, making a hook with a somewhat acute angle. The hook can then be honed down to the desired length.

The instruments should then be fastened in small handles, which can be procured of dealers in watchmakers' supplies for twenty-five cents a dozen.

Piano-wire should never be heated, and should be filed lengthwise.

A Pertinent Thought.—The dentist does not occupy the place, in the estimation of the people, that is his by right of the importance of his services. I think he is usually regarded as a sort of "necessary evil," and is avoided accordingly. People reason that his work is sure to be painful to them, and so it is put off as long as possible. Of course, we all brush our teeth, as we wash our faces; it is for cleanliness. But how many of us visit a dentist's office till forced to do so by an absolute rebellion of the teeth against the neglect? How many of us realize that a little extra care, regularly exercised, and visits for the purpose of examination at stated intervals will save us much, most of the pain that makes us shun a dental office as we would a chamber of horrors, and put the dentist upon a plane where he can be as friendly a guardian of our interests as our trusted family physician?—*Young Southern Mother in Dental Headlight.*

Some Hints on Filling an Artificial Tooth.

DR. C. C. EVERTS, INDIANAPOLIS, INDIANA.

THE first step is to shape the cavity. There are teeth on the market that are made with cavities, but you can seldom find one suited to the case in hand. I first grind the surface of the tooth I wish to fill with different sized corundum points, forming a shallow cavity, just the size and shape I want the filling. I generally, in a full upper denture, put two fillings, selecting the proximal surface of the central in one block and lateral in the other. I think two fillings look better than either one or three, but when you have extracted the natural teeth you can often copy the size and shape of fillings in the artificial set. I let the cavity extend pretty well over the face of the tooth, as the filling is there to show, and if it is down between the teeth, it is shaded, looks dark, and defeats its object. The next step is to drill the retaining point, the diamond pointed drill is the best to use for this, tho it may be done with an extra hard tempered engine bit moistened with spirits of camphor. It is unnecessary to put much pressure on the drill, many drills are ruined and manufacturers blamed for this fault in the operator; simply hold it lightly against the tooth, it will cut faster and no danger of breaking out the diamond point. The cavity should be kept wet. I take a common blow-pipe in my mouth, draw it full of water, and hold the tongue over the end to prevent its escape; the small end of the pipe naturally comes over the work, and by admitting air I can regulate the amount of water just as I want it. It is not necessary to make the pit very large, I make it a little larger than the drill and give it a slight undercut. The filling will hold if the gold is condensed properly. The tooth is now ready to fill, and can be finished and polished on the lathe wheels, and if it has been properly done it will add much to the appearance, and materially to the dentist's profit.

A Few Medicaments Well Selected.—When a student of medicine, twenty years ago, at the University of Nashville, the venerable Dr. W. K. Bowling (a worthy son of this proud old State of Kentucky) occupied the chair of "Theory and Practice." How often have we heard him warn his students against an "overweening confidence in drugs." He urged the most extended research and experimentation, but warned us to rely only on those things that had been tried and proved. We recall the experiences he related, the anecdotes and incidents culled from his years of practice, to show how he left the halls of his alma mater believing in the efficacy of all the so-called remedies of the pharmacopeia, and how he recounted the long series of disappointments running through years of practice, till he had reduced his stock of drugs to a "few simples," "a dozen or more of things well tested, that could be relied on to produce good results."

This teaching was valuable, and the lasting impression it made on us saved us much disappointment we else had met in practice. Thus we find in dental practice we need few remedies; but let us not be mere routinists, persistently refusing to try new things. Let us progress!—*Dr. L. G. Noel.*

"Syphilitic" Teeth are usually in a condition of general progressive atrophy, and defective in size and shape, whilst "*mercurial*" teeth are normal in form and size, but destitute of enamel, showing the naked dentine in a rough, rugged condition. Lamellar cataract and convulsions are also associated with mercurial teeth.

"Narrow strips of corset steel may be made into breeches. The temper is good and the steel is tough."—*Dental Review.*

Eucalyptus Leaves reduced to coarse powder—like smoking tobacco—and smoked in a common clay pipe, the smoke being drawn into the lungs and expelled through the nose, have marked curative effects in nasal and bronchial catarrh.—*Med. World.*

Facial Neuralgia and Allied Neurosis.

MR. LESLIE, M. B. (*Edinburgh Med. Journal*), states that about three months ago he found he was able to arrest a very severe attack of supra-orbital neuralgia in a very short time, by applying common salt to the nasal mucous membrane. During the last three months the author has been following up this method of treatment in neuralgic headache, faceache, toothache, earache, etc., and has found a rapid cure is obtained. Common table salt may be used by the patient as snuff, a pinch being taken into the nostril of the affected side; but the best results have been obtained when the salt has been applied by means of an insufflator. In practice, the author charges a small insufflator with about four grains, and the patient is told to draw air up the nostril while the contents of the insufflator are injected. The application produces little pain or discomfort, and relief is speedy. The stimulation by chloride of sodium appears to induce in the nasal branches of the fifth nerve a form of nerve motion, which causes reflex inhibition of the pathological process in the nerves affected, inhibits the abnormal form of nerve-energy, of which the expression is pain, and replaces it by the normal form, of which the expression is not pain. Tho a single application usually suffices for the immediate inhibition of neuralgia, especially when it is recent and localized in one branch of the fifth nerve, sometimes, where the disease has been of long standing and of extensive distribution, it may be necessary to repeat the insufflation every half minute for about five minutes.—*London Med. Recorder*.

Saving Exposed Pulp.—Dr. Jack says: As an illustration of the extension of the vitality of the root portion of the pulp, I have in my mouth a bicuspid where the body only of the pulp was devitalized. The live portion, after being made healthy, was covered with a paste composed of oxide of zinc, and a menstrum of equal parts of oil of cloves and carbolic acid. The thermal response of the tooth, which has continued for several years, indicates the vitality of the remaining field of pulp tissue.

As the discussion has drifted into the preservation of the pulp, I am free to say my confidence has continued to increase in the propriety of conservatively treating the dental pulp. Since adopting the method described by Dr. King, I am safe to say that not more than twenty-five per cent are failures to maintain the vitality of that organ. The fundamental principle to be kept in view is the avoidance of pressure, even the least being fatal. This is done by selecting a concave cap of suitable size and form, filling it with the paste before described, and laying it carefully over the part of exposure. The temporary filling can then be inserted. The medicated contents of the cap serve two purposes—it fills, completely, the space between cap and pulp, to prevent the accumulation there of exudations anesthetic and antiseptic, and its properties are salutary. The surface of the pulp is carbolized previous to this step in the treatment. I have had repeated presentations of the deposits of secondary dentine, the shortest one being in two years from the date of treatment, but have observed many pulps, after several years, in the exact condition they were when treated. Even in these instances, the result is better than devitalization of the pulps.—*Pennsylvania Odontological Society*.

To Make Swiss Broaches Soft, a piece of tin may be cut and bent so as to make a rough box, two and one-half inches long by one inch square. Fill half full of slacked lime, and place the broaches in the middle of the lime, and fill the box over them. Then heat to a red heat, either with the blow-pipe or in a stove fire, and allow all to gradually cool. They can then be polished by holding them flat on a hard smooth surface, and rubbing them lengthwise with oo emery paper.

Broaches rendered soft in this manner are very tough and can hardly be broken, and are safer for use in places difficult of access than those of spring temper.

They should be fastened in small handles, or used in the universal broach-holder.—**DR. T. FILLEBROWN.**

“Heaven’s Cordial.”

DR. J. N. HARRIS, RUSHVILLE, IND.

EDITOR ITEMS:—The recipe you gave some years ago for soothing the toothache, after-pain in extracting, and the pain of neuralgia, inflammatory rheumatism, etc., has been of great use to me. For the good of others who have not a cordial equal to it, allow me to reproduce it, for it will not disappoint any one:

Best alcohol.....	1 ounce.
Chloroform.....	2 ounces.
Sulph. ether.....	$\frac{3}{4}$ ounce.
Gum camphor.....	$\frac{1}{2}$ “
Laudanum.....	$\frac{1}{8}$ “
Oil of cloves	$\frac{1}{2}$ dram.

For toothache, plug the carious tooth with cotton saturated with this cordial; if for after-pain in extracting, press a good quantity of the saturated pledget well up in the socket, and allow it to remain for an hour or two. If there is fear of hemorrhage, place a little powdered tannin on the side of the pledget first entering the socket. You can also relieve the most stubborn toothache of pregnancy by first bathing the tooth and gums with cotton soaked with it, having the patient draw in the breath a few times, so as to pass the air over it; change the saturated cotton once or twice, if necessary. It is sure to soothe the pain and the whole nervous system. For toothache in pregnancy, when the suffering has been fearful and the prostration dangerous, I have always administered it with relief. I could not practice without it. It should be in every obstetrical hospital and in every humane institution, and in every household. Rubbed on the skin it is very penetrating, and of frequent use in all painful swellings and bruises, if the skin is not abraded. In the dental office it makes the dentist master of the situation. I have studied, worried, and experimented, and bought everything, in hopes of finding “the nectar distilled in the garden of the gods;” but I never found it till I found this.

Lower Dentures.

SIZE, fit and articulation” do not always hold a lower plate in place, when the jaws are in their normal condition, open. It is impossible, in some cases, to wear the lower plate wide on the labial side without the muscles, in certain movements, forcing the plate inward. I have found that weight on the lower jaw is an important factor.

I should suppose any one taking an impression of a flat lower jaw, would use a flat cup.

I have for many years raised, or enlarged, the impression over the ridge, and made the plate no deeper on the inside than it could be worn.

You say, “have bicuspid and *molars* as long as incisors.” No! never. The ten anterior teeth should be on a line, and the molars shorter and inclined upward, posteriorly. This gives the curve of nature, and when the lower teeth are arranged to them, on placing the cutting edges on a flat surface, only the incisors and second molars will touch.

Always arrange the upper teeth first, as they give character to the mouth, mainly. Then arrange the lower to them, and trying in the mouth, make what changes may seem necessary; and no set of teeth ought ever to be put into the mouth, finished, without first having been seen there in the wax, as no wax rim conveys a correct idea of how the teeth will look, and too much time cannot be spent in accomplishing this object.

Then again, if gum sections are used on the upper jaw (which I never use), they are entirely out of place on the lower, if we wish to secure the best results in articulation and artistic appearance.—*Haskell, Archives.*

That Root.

A LADY, aged forty years, called to have the root of the first right lower bicuspid removed. The top had been broken off sometime before, well down near the margin of the gum. The second bicuspid and the stomach teeth were both in place—both large teeth, crowding on the root to be removed. I made a crucial incision on the lingual and buccal surfaces of the gum sufficiently far down to ensure a good hold of the fang.

To make these crucial incisions neatly, have your lancet sharp; make a transverse cut on the inside quickly, just long enough to admit one beak of the root forceps (immediately over the root, as seen in the gums), then insert the blade of the lancet in this transverse incision, and cut perpendicularly quickly to the margin of the gum on the inside and outside. It is always best to do the lancing on the inside of the gum first, lest the cutting unsettle your patient so you cannot afterwards have a good chance to perform it properly. Make no effort to cut through the alveolus with the lancet. Get the flesh away, and then heroically grasp the root in the proper place, and by gentle squeezing the beaks will crush through the process, and bring away the root without much injury either to the gums or process.

Bristol, Pa.

G. W. ADAMS, D. D. S.

Why Not Use Escharotics.—If the experiments are true, and if they tell the truth, it is fallacious to wipe a cavity in a living tooth with an escharotic. I say it is fallacious to do it. An instance was related by Dr. Noyes, based on the experiments of Dr. Miller, to prove the fallacy of that. Some people may not estimate it at its true value. They may fail to see what is meant to be conveyed. They may have a very inadequate idea of what it is to try to do the correct thing in practice, and nothing will convince them except they have their own hands, fingers, face, or any other soft tissue burnt. To dispose of escharotics, as they relate to this subject, I will say, and I have said it over and over again, and I will say it as long as I practice dentistry, till somebody can prove to the contrary, that all substances that coagulate albumen are hindrances to diffusion and are self-limiting in action, and that they are only useful in those cases where diffusion is not needed. I feel so confident of this that no one has ever had the temerity, or the patience, to perform a series of experiments that would prove the untruthfulness of this statement.—*Harlan*.

Canal Dressing.—Dr. Peirce, of Philadelphia, uses iodoform as a canal dressing after the following formula:

R. Iodoform,
Oil of cloves,
Oil of eucalyptol, āā 3̄ vj.

This disguises the odor very effectually, and is a dressing that may be used with good results. It has been esteemed very beneficial in the treatment of pyorrhea alveolaris.

Dr. E. C. Kirk makes a paste of iodoform with cinnamon oil, thus disguising its offensive odor.

Isaac Sawtelle, Dentist and Murderer.—Boston dentists are not well pleased with the action of the Massachusetts Board of Registration in Dentistry, because it granted a license to Isaac Sawtelle, the fratricide, while the fellow was an inmate of State prison serving a sentence for heinous crime. Many dentists have been dissatisfied with the administration of the present board, alleging that it has been unfaithful to the trust reposed in it, and generally unmindful of the duty it owes the profession in the way of protecting it from the competition of quacks, and preventing the admission to practice of persons of immoral character. They threaten to bring the matter to the attention of Governor Brackett, and to ask him to order an investigation.—*N. Y. Tribune*.

Have any Ruminants Upper Front Teeth?

EDITOR ITEMS:—In your June number there is an article which says: "You are mistaken in saying that *all* ruminants are without upper front teeth. The rabbit is a ruminant, yet he has front teeth on the upper jaw." Let me ask Dr. Beebe a few questions.

The ruminants belong to the order ungulata. Has the rabbit hoofs? They are artiodactyllic. Has the rabbit an even number of toes on all his feet?

The ruminants have compound stomachs. Has the rabbit a rumen or a psalterium?

The ruminants, usually, have horns, or antlers. Has the rabbit?

The ruminants have prehensile tongues and flexible lips. Has the rabbit?

The ruminants have crescentic molars. Has the rabbit?

The ruminants, usually, have eight lower incisors. How many has the rabbit?

The ruminants have no incisor teeth on the upper jaw, because they are furnished with an incisor pad. Has the rabbit this?

The incisors of the rabbit spring from persistent pulps. Is that the case with ruminants?

Here is the incisor formula of the ruminant : $\frac{0.0}{4.4}$. This is that of the rabbit : $\frac{2.2}{1.1}$. How is this discrepancy accounted for if the rabbit is a ruminant?

The ruminants lie on the side during rumination. Did the critic ever see a rabbit in this position, naturally?

The ruminants can regurgitate their food. Can the rabbit?

The ruminants are, usually, large animals. The rabbit is small.

The ruminants are covered with hair. The rabbit has fur.

The hind legs of the ruminants are not disproportionately long. Those of the rabbit are.

The ruminants move with an even pace. The rabbit leaps.

Finally, the ruminants have enamel completely surrounding the incisors. The rabbit has enamel only on the front, or anterior face.

If the doctor will admit that he has completely confounded orders, and that the rabbit is a *rodent*, he will be able to see that it conforms to the other rodents, not only in dentition and the structure of its teeth, but in its external covering, its size and the disproportionate length of its hind limbs, which make of it a leaper like other rodents, instead of a walker.

W. C. B.

Too Much of a Good Thing, Sometimes Bad.

IF there is one thing more than another that has given dentistry the high standing before the world that it now enjoys, it is the enthusiasm which pervades its professional gatherings, and the avidity with which its members take hold of any new or progressive idea that may be presented, and while in doing so they have nothing but the best interests of their calling at heart, their very zeal is oftentimes a mistaken one, and more calculated to produce harmful than beneficial results. The average dentist essays to be, and generally is, of a practical turn of mind, and as such is a valuable constituent in what goes toward making up the representative member of the profession, but he is simply one element. The dentist of to-day, who relies exclusively on ocular demonstration and digital dexterity in the study and practice of his profession, will find himself cutting but a sorry figure in the great race for honor in it. The hand and the eye have their uses, but not without a cultivated brain to direct them. There was a time when all that seemed necessary for success in dentistry was the possession of what is commonly termed mechanical genius, but that day has passed. It requires a cultivated intellect to grasp it in its present condition, and the man who would succeed must possess it, and the Association which goes farthest toward its cultivation will reflect greatest credit on its members.—Editorial in *Western Dentist Journal*.

Dentistry as it Was, Is, and Should Be.*

BY W. H. ATKINSON, M.D., D.D.S., NEW YORK.

DENTISTRY was practised by a few men who recognized the lack in general medical practice of any particular knowledge of the teeth, thus causing neglect of these organs till extraction became the common fate of an aching tooth.

The field thus opened to attention attracted some replete with genius, and some with less wisdom and skill.

Through these were gradually evolved methods of practice, effects and conditions were noted, and by patient experiment palliatives and cures were discovered.

In respect to the filling of teeth at that time, the efforts were confined mostly to plastics, variably crude in character—gums, putty, sulphur, etc. Some filling was done with metallic lead, forced one way or another into the cavity. Tin was also used, and much comfort was secured to patients through these materials; and later, by gold, and also bits of porcelain ground to fit and set in balsams.

The substitution of teeth was effected by means of bone, and other plates carved to fit better or worse, and to these plates natural teeth were attached in various ways—wood, bone, silver, and gold embracing the materials for bases.

Hand-carved porcelain teeth and plates were, and are, the best effort in this direction.

Immovable and movable bridges, where required, with or without porcelain, furnish admirable means of supply; and it is doubtful whether they will ever be laid aside.

Crowning inside of a collar for bad breaks, or porcelain filling, where demanded, represent the highest stage of the art of filling.

Operative dentistry has reached an altitude of skill that it is hazardous to assert will be much excelled in originality.

The door is wide open for *surgical* improvement, and it is in *preventive* dentistry that the world may have the greatest cause to bless us as a profession.

So much attention has been directed to mechanical expedients, and such admirable means are now at our command, it is little wonder that preventive dental surgery has held a secondary place in the esteem of most dentists.

A thorough knowledge of the development of the teeth in fetal life, and in early childhood, furnishes the ground-work for intelligent preventive and preservative measures; but to this must be added a medical training, competent to lead the general system to do its duty of nourishment to the teeth at all stages of their growth.

In reparative dentistry, socket and other bony restoration, after solution by pyorrhea alveolaris and other caries, or by necrosis, implantation and sponge, or other grafting, supply means almost beyond computation, as to value in restoring the mouth and jaws, with their appendages, to healthy, useful, and beautiful condition.

Dentistry has come through a vale of ignorance, intolerance, and deceit. In no other profession has advanced thought met with more opposition, but in no other has necessity drawn out such general and superior genius. A dentist is, and should be, *all* a man, and it is because of these qualities, in many of the earlier workers, who, being banned by "professionals," were driven to experiment and continued investigative effort, that we, as a profession, have grown through trials—many and severe—to a condition of proud prominence.

To-day a dentist may be safely placed in any position where skill, forethought, promptness, kindness, firmness, and general intelligence are required, and defy mankind to produce his superior from any other department.

The perusal of the literature of dentistry, past and present, gives comfort to an earnest investigator. The increasing appreciation of the value of clinics marks general growth, and the necessary attendant on growth is the desire to know more, and see and understand more, of new methods and practices.

* Written for the North Dakota State Dental Society, 1889.

It is natural that a successful operation, if new to the operator, inspires him to promulgate his discovery; and let him not despair if many claim to have done the same, or a better, long before he did.

Coexistent discoveries are not at all uncommon, and if a false application or explanation of a part of a proceeding is proved, it does not follow that the whole is condemned, nor that, even loaded with discrepancy, it fails in producing a directly beneficial result to the patient and the operator.

Many are apt to condemn on slight evidence; and were these same decriers held to account for their own failures, even in what might be called regulation operations, the excuses of these objectors would be many and varied, and their vision and judgment considerably obscured. Yet one hears implantation, bridge-work, the treatment of pyorrhea alveolaris, and sponge grafting condemned vigorously, thus assailing the acmé of our advances in redemptive effort.

Recently an article appeared in which the endeavor was made to give implantation and bridge-work a very black eye. Unquestionably the author of that paper wrote in good faith, and it would be wisdom for him to decline to implant a "corpse," or place a festering nuisance of a bridge in a patient's mouth, for it seems quite clear that the expected results would probably follow such attempts.

Which is the more manly, sensible, professional, and practical, to follow in the steps of known investigators, and, if necessary, to experiment with one's method, if difficulty be met with in discriminating among them, or to decry systems because some failures come under observation?

That bridge-work does fail is evident to nearly every dentist, but that it fills a place, in its own sphere, second to no other system of restoration, is also patent to any one who has a knowledge of its several constructions.

Implantation has proved successful for a series of years, and the advantages of its employment measure quite proportionately with the average success of large gold operations.

For the restoration of a complete arch where there are two to five teeth forward of the first molars, and a bridge is incompatible, implantation is eminently useful, and permits a beautiful, useful, and safe result, whether the attachment be vital or mechanical.

The surgical and medical treatment of pyorrhea alveolaris, and irregularities of the teeth and jaws, have been thoroughly tried, with nearly uniform success.

Much has been written in all these departments, and improvements may undoubtedly come out from time to time, but success is *now* assured to such extent that the intelligent operator need not hesitate to undertake any one of these efforts.

The journals which devote their pages to dentistry constitute a continually revised text-book, well repaying the investment in all of them; and a remark made long ago—"I want them *all*"—is true, and points to a means of improvement second to none for the average practitioner.

The growing tendency for post-graduate schools indicates the awakening appreciation of the inadequacy of the usual college course, tho the curriculum of any of them, if thoroughly followed, would be a strong bar to these post-graduate efforts.

The business character of our schools is too prominent, and makes the effort to increase their actual efficiency subservient to the question of profit and large classes.

College education is a grand thing, but it can never wipe out private pupilage, on the basis of good to the student, till the courses are extended over a sufficient period of time to give the student large clinical experience in a well-managed and largely-attended infirmary.

The demand of the day in the line of educating dental students is colleges with endowed chairs, located in several accessible centres of the country, furnished with the best appliances, for every branch of dentistry.

Provision should be made for hospital wards for serious cases, and there should also be ample infirmary accommodations. These may properly be State institutions.

In some sections several States might unite in the support of one college, locating it in the most central point.

We need better teaching, more clinical experience, and longer pupilage for our student. Too much anxiety is shown by many to secure a degree that they may gather money somehow. Professions are loaded with incompetents to such an extent that we might almost say bad service makes almost more work than neglect of all.

The endowment of such institutions as have been named would properly include scholarships, secured by competitive examination, not only in regard to mental capacity, but also with respect to general manual and administrative dexterity.

It is not intended to advocate free instruction outside of the scholarships, but to permit good professors to be in charge of all college chairs and untrammelled by the claims of private practice, thus removing the great obstacle to earnest, continuous work in advancing the quality of dental education.

Our past has been dark and full of trials and mistakes. Our present is replete with methods, appliances and apparatus.

Our future should bring to the service of our patients the ability so to care for the teeth of children, and also their general health, that when they reach adult life their teeth, their bodies, and their knowledge of the principles of correct life shall furnish them—as far as human effort can—with the capacity, knowledge, and will to continue the good work of intelligent propagation of children, continually advancing to a perfect endowment of health of body and mind.

The dentist of the future should be man, priest, physician, and friend, all in one. Our bodies should be clean, our hearts pure, our brains clear, and our health sound. The ideal dentist will be the ideal man.

The Rights and Standing of Dental Editors.

Editorial in *Western Dental Journal*.

DR. H. C. MERRIAM, in a recent letter to Dr. C. N. Pierce, published in the ITEMS OF INTEREST, makes the following remarkable statement:

"Regarding editors, they have no right to speak for me or the profession, for I do not know whether they speak as traders or editors; but do know that everything they touch, they trim, so that the credit of production is taken from the profession and given to themselves."

If Dr. M.'s productions stand no higher than his evident regard for the truth, they are as worthless as the credit he wishes to establish for certain files which are simply reproductions of old patterns that have been in use among dentists for years.

This is not the first slur that this gentleman has cast at the dental editors of the United States, and we, for one, do not intend to pass it by without comment. We doubt not if comparison were fairly made, the average dental editor would be found to possess as much reputation for integrity, veracity, and honesty of purpose as he who, possibly for lack of ability in any other direction, has for years been posing before the dental profession as a champion of dental ethics while violating, almost with every breath, its foundation principles by the vituperation of his neighbors; we have watched this doughty gentleman's emanations for some time, but if there was ever among them anything that would tempt the most *ordinary* editor to either trim or purloin, it has escaped our notice. Since when, we would like to ask him, has it come to pass that editors have no right to speak for the profession they represent? Can the gentleman who makes this onslaught on them show a record of personal sacrifice in the interest of the dental profession that will begin to compare with that of the humblest and most obscure editor in the land? We doubt it.

[Dr. Merriam, in the article referred to, is not only crusty toward dental editors and ungentelemanly toward Prof. Pierce, but incorrect in his assumption of being the inventor of "the Merriam files." They may be an improvement, but the elastic bent file for use on the proximate surfaces of teeth is not a new idea. Dr. Pierce's reply to Dr. Merriam was in favorable contrast with the latter's irritating, antagonistic, assumptive style.—ED. ITEMS.]

Supernumeraries.

EDITOR ITEMS:—Dr. J. M. Reed's question, in Jan. ITEMS, in regard to supernumerary incisors was brought to mind recently by a case in practice. The patient, Mr. A., aged about 30, has five sup. incisors, perfect in form and position. The supernumerary being a right lateral, so perfect, I am unable to determine which is which. When cutting his permanent teeth, the cuspids came in the position of tushes, but by persistent pushing by the mother, with her finger, they were brought into position. They did not know the reason of the crowding till pointed out to them a few years ago by a dentist.

Gibson City, Illinois.

F. W. SMITH.

Some of the More Recent Works on Dentistry Are: The three volumes called, *The American System of Dentistry*. This is composed of essays from some of our foremost dentists on almost every phase of dentistry. *The Dentist's Manual of Special Chemistry*, by Dr. Clifford Mitchell, of Harvard, is an excellent work. *The Student's Manual and Hand-Book, of the Dental Laboratory*, by Dr. L. P. Haskell, of the Northeastern University, is another book that should be in every dental library. *Dr. Guilford's* and *Dr. Buxton's* works on *Anesthetics*, are both valuable; so is the second edition of *Essig's Manual on Dental Metallurgy*.

Alveolar Abscess.—Dr. Black has used hydrogen dioxid in combination with mercuric chlorid as an injection for alveolar abscess, and other treatment requiring antiseptic and germicidal effects. His formula is:

Rx. Hydrogen dioxid.....f ʒ j
Mercuric chlorid.....gr. ij

Printers and their Allies will be very glad to know, says the *Scientific American*, how to prevent screws from becoming fixed with rust. It is well-known that iron screws are very liable to rust, more especially when they are placed in damp situations. When employed to join parts of machinery they often become so tightly fixed that they can only be drawn with considerable trouble—a fracture sometimes resulting. To avoid this inconvenience, screws are generally oiled before being put in their places; but this is insufficient. A mixture of oil and graphite will effectively prevent screws from becoming fixed, and protect them for years against rust. The mixture, facilitates tightening up; is an excellent lubricant and greatly reduces the friction of the screw in its socket.

The Kansas City Dental College has had a successful course. There were seventy-two scholars in attendance, and sixteen graduates.

EDITOR ITEMS.—Not long since I extracted a six-rooted, left upper first molar, with the roots all well developed, for a lady thirty-five years of age, weighing from 175 to 200 pounds. I found it necessary to exercise considerable force in removing it, bringing away small pieces of the alveolar process.

Mineral Point, Wis.

W. G. HALES.

"Nitrous Oxide of Gas," says "Dr. C. L. Phillips," is the only sure and safe way; and he says in the same flaming advertisement, that he "attends to all the difficult parts" of dentistry.

When a child's health is deteriorated through constitutional disease, the first molar tooth is generally the first of the second set to suffer, owing to the fact that it is the first to calcify, and consequently the first to show decay.

Pestiferous member: "Mr. President, I rise to a point — —"

Cranky President: "So does a carbuncle."—*Odontographic*.

For Our Patients.

The Cruel Dentist.

THE hard-hearted dentist will pull you a tooth
 With never a tear in his eye ;
 "Oh, if I should pity my victims, forsooth,
 I'd always be ready to cry!"

He'll smile you right down in that "wonderful chair,"
 And wrap you around with the grace
 Of a Brummell, with shield of linen so fair—
 But scarcely more white than your face!

He'll dig a deep hole in your quivering jaw
 And level it off with a spade ;
 He'll pound with a hammer—he'll saw with a saw,
 For that is a part of his trade.

He opens your mouth from the north to the south
 And puts in a horrible "dam!"
 Builds a curious bridge to reach quite across
 And fills it with teeth—if he can.

He'll take all your silver—he'll pay you in *gold*,
 But give you one dollar for ten !
 Take houses and lands—then, when you are old,
 You'll have no more teeth than a hen !

And when you are sorry that "life is no good,"
 Because you are old and *so* poor ;
 When he's got all your money, shed all your blood,
 He'll smile you right out of his door!

—*M. L. Harrington, in Buffalo Express.*

Another Wail of Woe.

A LITTLE corn on a maiden grew,
 Listen to my wail of woe,
 Caused by the pinch of a too-tight shoe,
 Instead of a three a number two.
 It grew, it grew :
 Listen to my wail of woe.
 As time went on (as time will do),
 Listen to my wail of woe ;
 The corn waxed red—the maiden blue—
 'Twas ten times worse than the grip (kerchew!)
 Too true! Too true!
 Listen to my wail of woe.

She had a seat in the end of the pew ;
 Listen to my wail of woe ;
 And a man with another seat in view
 Put his cowhide boots on her kangaroo,
 Oh, whew! Oh, whew!
 Listen to my wail of woe.

That Awful Tooth!

A STYLISHLY dressed young miss, in company of her mother and aunt—a tall, thin lady, with a long nose and face, prominent cheek bones, having on spectacles of antique pattern—visited a New York dentist to have a loose temporary tooth extracted. The tooth was an inferior bicuspid crowded out of position, and resting on top of the permanent tooth, with only a slight connection with the gum on the lingual surface. After the mother and aunt had done a vast amount of coaxing, with an occasional encouraging word from the doctor, the young lady seated herself in the dental chair, when she said:

"Now, dentist, I ain't going to have this tooth out without taking chloroform, so I won't have any pain whatever."

"Nonsense!" exclaimed the doctor, after glancing at the tooth. "The operation will be almost painless, anyway, for I could pluck the tooth out with my little finger."

"Pa said you must not take chloroform under any circumstances," interrupted the mother, "and you mustn't think of it, Arabella."

"Some men ain't got a bit of feeling," said the aunt, with a stern look over her spectacles.

"I don't care, now, I won't have it out without taking something," she whimpered, plaintively.

"Can't you put something on the tooth so that the poor child won't feel any pain?" asked the mother.

"Of course, I could," the dentist replied, "but it is not necessary; the operation cannot possibly be a painful one, without any application to the gum," said the dentist.

"I suppose you cut the gum before you take out the tooth," observed the aunt, interrogatively, "'cause a friend of mine had her gums all torn to pieces by a butcher dentist, who didn't know enough to do this," saying which she heaved a mournful sigh.

"I won't have my gums cut at all, so there, now," said the miss, with decided emphasis.

"It is not necessary to lance the gum; indeed, I only do it in extreme cases, which are rare," the dentist replied, while the aunt gazed at him in apparent horror, through her spectacles.

"Now, Arabella, don't keep the doctor waiting," said the mother, encouragingly, "let him take the tooth right out, that's a dear; you know it troubles you very much when you eat, and the quicker you get rid of it the better."

"If that tooth is extracted without cutt'n the gums, she'll have her jaw broke, that's all," said the aunt, with a significant nod of her head.

"We don't break jaws here, nor are we responsible for the too free use of them," observed the dentist, with a frowning look at the last speaker.

"Some men—but la me, suz," the aunt replied, while helping herself to a seat,

"Come, now, dear," said the mother, "we are keeping the carriage waiting, and I'm afraid the poor horses will take cold, so let the doctor extract the tooth at once and have done with it."

"I don't want to have my gums torn to pieces," she said, crying piteously.

"No danger of that, at all; I'm sure there isn't, for the doctor says so," the mother replied.

"What will you take it out with?" she asked the dentist, in broken accents.

"Let me see?" said the doctor, taking an excavator and touching the tooth gently—then, with a rapid motion, he lifted it clean from its resting place without his patient's knowledge.

As the tooth fell in her mouth, she exclaimed, in ecstasy of spirits:

"Why, mother, it's out! and I didn't feel it a bit; ain't that splendid?"

The mother thought so, too ; and the aunt looked dazed. Rising from her seat, she said : "I'll warrant the roots are all in ; but some men—well, I won't say."—*The Practical Dentist.*

"Oh, dear me, I'm almost dead!" exclaimed a society lady, who, in company with her husband, had called on a prominent dentist to have an aching tooth extracted.

"And you will please get to work quickly at the job," said the husband, addressing the dentist coolly, as if he were alluding to an ordinary business transaction.

"I don't propose to have any hurry about it!" she said, testily.

The lady was a long time in removing her bonnet and wrap—to the palpable discomfiture of her husband—and, when finally seated in the dental chair, she said :

"Now, doctor, I want you to examine this tooth," putting her index finger on a broken down bicuspid, "and see if you can't put something in it to relieve the pain."

"The best course to take," said the dentist, after making an examination of the tooth, "is to have it extracted at once."

"That is very sensible advice," said the husband, "and I told Kate, while coming here, that you would so decide."

"But *Kate* don't want any of your advice," she said, emphasizing the word in italics, and looking daggers at her husband.

"Do keep your temper, my dear, and allow the *doctor* to advise you, then," he said.

"I won't have the tooth out, and that's the long and short of it," she muttered. "Now, doctor, can't you put some medicine in the tooth to stop the pain, and when I get stronger—I am exceedingly weak now—I will come to you and have it extracted."

"The conditions of the tooth, I am very sorry to tell you, madam, forbid me giving you any hope in the plan you propose."

"I don't see why you can't stop the pain," she said, snappishly, "you have done it not only for me, on previous occasions, but for other of your patients, with whom I am acquainted."

"It would require a long time, madam, for me to give you a history of the difficulties to be encountered in this case," said the dentist ; "all diseased teeth are not in the same condition, nor have identical surroundings. Your tooth belongs to a class which are doomed, and, as I told you before, by its removal only can you get relief."

"Have it out at once, and be done with it," said her husband, while approaching the dental chair.

"Have-it-out-at-once," she repeated, drawing out the words, and with a provoking inflection in her voice, "of course, you would, if you were in my place, wouldn't you, Alex? You are so very *brave*, when danger is a *long* way off—and how *heroically* you endured toothache for nearly two whole weeks, less than a year ago—*howling* in the house all night *long*, keeping me and the servant awake, and resisting, *bravely*, all my persuasions to have the tooth out!"

And Alex was silent while the performance went on.—*The Practical Dentist.*

Treating Pulp.—Dr. Tees says : I very seldom use arsenic—probably not more than a half dozen times in a year. In case of an exposed pulp in a deciduous tooth I syringe with warm water, remove the *débris*, apply a pledget of cotton dipt in pure coal tar creosote, and seal it in with plastic amalgam. This can be manipulated so as to prevent pressure on the pulp. For capping exposed pulps in the permanent teeth I use the same creosote and chloride of zinc applied on asbestos felt. I secure this in position by means of thin oxyphosphate, and then cover it with a harder material.—*Pennsylvania Odontological Society.*

Editorial.

Are Teeth Degenerating?

JUDGED by the many discussions we hear and read, we should infer our teeth are degenerating with each generation, and that finally we shall be edentulous. This is a somber view, and, we believe, not in accordance with facts of the past or a proper theory of the future.

We hear of more deviltry, but this does not prove the increase of crime; we have greater facilities for hearing of it. We see more of the ravages of caries—not that teeth are more carious, but brought more to our notice. In proportion to the increase of population, we believe there is neither an increase of crime nor of carious teeth. As people are increasingly better fed, educated, and advanced socially and morally, the general type of humanity is not lowering, but rising; and they take better care of their teeth, and are appreciating more and more the work and skill of the dentist. Mothers are better informed on the influence of their habits, food, and their general condition, on their progeny. They are more reasonable in the treatment of themselves and their children during gestation; and there is more information on the character, effects and value of various foods, and their variety is advantageously increased.

It is true, teeth in America are not as good as in Europe. But this is not the result of our climate, or of any necessary surroundings. Emigrants who, in their native countries, ate plain, hard food, and lived and worked much out-doors, using little stimulants and enervated by few bad habits, now frequently live on soups and soft food, and many of them are more sedentary in their employment, indulging in luxuries and more concentrated, rich food and stimulants, because they can afford these. They go to so many excesses, and pay so little attention to the laws of health, that they soon find themselves physically degenerated. But those who become intelligent, forehanded and orderly in their habits, improve; and their children and children's children are physically, morally and socially an improvement on their parents—and, therefore, they have better teeth.

Again, we speak of "An American type of teeth" being inferior to the European type. But, generally, when we refer to an American type of teeth, we mean a *mixt* type. As persons of divers nationalities are poring in on us at the rate of 300,000 a year, and gradually mixing with us and with each other, we are certainly having a mixt type of teeth as well as of people; and tho, finally, this may be a blessing, we must first suffer the penalties of the violated law of harmony. As this mixing multitude become Americanized, we shall have a resultant type of teeth less liable to irregularity, crowding and decay; and this is now taking place.

With this local exception in the effect of the greater intermingling of races in this new Republic, there is not much difference in the human race to-day from its condition in days gone by—unless we note improvements. Comparison between mummies and skulls of those who lived thousands of years ago, and people now living, shows but little, if any, change either in the number, form or character of human teeth.

It is true, as we come from this barbarous savagery to the hot-house of modern artificial civilization, we find more carious teeth. It is like taking cows from their native and natural feeding in the open pastures, and confining them to the hot slops and close quarters of the distillery. But this does not show that the teeth of cows in general are deteriorating. So, if we suppress the pernicious habits of civilization, the teeth of its subjects will improve. This, we believe, is being done. Men and women in our large cities are getting more discreet in their diet and in their general habits; and, in proportion to this, there will be an improvement in the teeth.

What we started out to show was, that, as a race, man is not degenerating in the character of his teeth ; that he has as many and as good teeth as formerly ; and if he does not abuse them, they will last him his life time, as surely now as in former generations.

"But you do not mean to say that the sins of the fathers are not visited on the children in the degeneracy of their teeth, as well as in other diseases?"

We do not ; and we hope you recognize, also, that the reform of the fathers is seen in the improved condition of the children.

Man, in his nature, is wonderfully elastic, yielding marvelously to change of condition ; yet as marvelously rebounding to a normal state when restraint is removed, thus preserving characteristic type. A want of a certain tone will cause a parent to show the loss in health, or the entire destruction of the third molars, or even of the first molars ; or the minification, malposition or malformation of a lateral incisor, or the peculiar pinched V-shaped arch or other deformities of the maxillary ; and then the children, and children's children for several generations may be similarly affected, if subject to similar conditions. But, for instance, suppose the affliction of that parent was caused by being subjected to the deleterious life of the city hot-house, and his children, as they grew up, became farmers in the far West, do you believe there will be no return to the normal type in the generations that follow them?

Some one has said, and it has been echoed by others, that if the third, or even the first molars were extracted as soon as they appear, and so in that child's children to three or four generations, the class of the teeth thus prematurely removed would gradually cease to appear. We do not believe it.

Prof. Truman says :

"The whole question of the degeneration of the teeth is one which requires much time and thought. I am not of those who regard the degeneration of the teeth, of which so much is heard, as one of the laws of the universe ; or of those who argue that the time will come when the human race will be edentulous. If we go back to the teeth of prehistoric man as seen in skulls yet preserved, we find precisely the same characters as are seen in those of to-day. So also in the teeth of the mummies. If we examine the teeth of all races, in all climates, and in all lands, we find the same conditions. We don't see so much of this degeneracy as we hear of ; but we do find it in American teeth. The teeth of the European nations are denser and harder in structure than those of the Americans. Whatever the cause of the inferiority of American teeth, it is local, and it shows a lack of equilibrium in the development of the type, inseparable from the beginnings of a mixt race, as we are ; but after a while the equilibrium will be established, and the type of teeth which will prevail will be known as the American type, which will not be inferior to those of other races. It is even now growing."

Chloride of Methyl.

WE make this new local obtundant prominent this month, believing our professional readers will be abundantly repaid by its study ; tho, of course, they can only practically know its value by providing themselves with it, and making use of it in their practice.

The Wilmington Dental Co. has promised to procure a supply without delay ; and tho it is necessarily of high price, by being of foreign manufacture and under a French patent, so little is necessary in each case, it may be made remunerative. And the gratitude of patients will be sure to embrace the reputation of dentists who take the lead in its application.

Dr. Rhein, of New York, who is to receive the chief credit for its introduction, is a gentleman of such high standing and long experience that what he says on another page may be taken without reserve. He should receive the thanks of the whole profession for refusing a tempting opportunity to cover its use in the treatment of teeth with letters-patent.

The Georgia State Dental Society meets at Gainesville, Ga., July 9th to 12th, 1890.

The Secret of the Quack.—We have received two or three articles in reply to our friend who asked if any one could tell how the quack gets the reputation of painlessly extracting teeth.

These replies show how he does *not* do it, and give surmises how he makes his patients *believe* he does do it. But if these traveling quacks have a way of thus making their patients believe they are not hurt, is it not a valuable secret? One thinks it is mesmerism; but in the half minute he is extracting a tooth, could he exert such a power? Another says it is on the principle of "Christian Science." Well, then, let us have more of it, instead of denouncing it as a humbug. Still another says it hurts, but the patients are ashamed to say so, or are frightened so they do not feel it. But why do not these conditions work with us? We ought to be ashamed not to be able to control patients as well as do these mountebanks.

Clinton Atkinson, M.D., son of William H. Atkinson, M.D., died May 31, of pneumonia, after an illness of five weeks. He was a graduate of the New York College of Physicians and Surgeons, and an obstetrician of ability. He leaves many friends.

Missionary Dentists.—The favorable reception of missionaries of the Gospel among heathen nations has of late years been greatly promoted by sending as heralds regular graduates of medicine, who, by the exercise of their skill in the healing art, have won the confidence and esteem of the most barbarous and bloodthirsty tribes. The practice of dentistry is, says the *American Journal of Dental Science*, likewise proving a means for peacefully introducing the missionary into the good graces of suffering savages, and in a recent tour of the island of Formosa it has proved a fine adjunct to missionary labor. The radical relief of toothache, by simple and obvious means, may well excite heartfelt gratitude in the sufferer, and engender such confidence in the friendly disposition of the missionary that easy access will be gained for the faithful ministration of the Gospel teacher. The attention of the various missionary boards might be profitably directed to the obvious advantages of having more of their messengers properly qualified and equipt for the practice of dental surgery among the heathen.

We have been much pleased at the interest missionaries have taken in receiving dental instruction as a part of their qualification for Bishop Taylor's missions in Africa. The little clinical instruction we have given in Mrs. Osborne's Missionary Institute in Brooklyn has produced encouraging results.

Woman's Work.—Dr. Talmage says: "My judgment in this matter is, that a woman has a right to do anything she can do well. There should be no department barred against her. Now, I say, if there be any preference in occupation, let women have it; God knows her trials are the severest. By her acuter sensitiveness to misfortune, by her hour of anguish, I demand that no one hedge up her pathway to a livelihood. Oh, the meanness, the despicability of men who begrudge a woman the right to work anywhere in any honorable calling."

To Produce Spring Temper in Swiss Broaches.—To draw Swiss broaches to a spring temper they should be placed on a steel, iron, or brass plate, one-eighth of an inch in thickness and three inches square. This should be held by pliers or forceps over the flame of a spirit-lamp, and be kept continually moving over it, so as to keep the plate as uniformly heated as possible. The broaches should be watched very carefully, and when they become of a dark-blue color they should be dropt in cold water.

The American Dental Association will hold its Thirtieth Annual Session at Excelsior Springs, Missouri, commencing Tuesday, August 5, 1890, at 10 o'clock. A. M.
96 State st., Chicago. GEO. H. CUSHING, *Recording Secretary.*

New Jersey State Dental Society.

EDITOR ITEMS:—The Twentieth Annual Session of the New Jersey State Dental Society will be held at the Coleman House, Asbury Park, commencing Wednesday, July 16th, and continuing through the 17th and 18th. The State Board of Registration and Examination in Dentistry will convene for examination of candidates on Tuesday, July 15th, at 10 A. M. Hotel rates will be reduced to \$2.50 and \$3.50 per day. Program will be mailed to those applying during June.

CHAS. A. MEEKER, D.D.S.,
Secretary.

Newark, June 2d, 1890.

The Pennsylvania Dental Society meets at Minaqua Springs Hotel, Pennsylvania, Tuesday, July 28th.

The Twenty-second Annual Meeting of the Georgia State Dental Society will be held at Gainesville, Georgia, July 9th, 1890. All delegates to the Southern Association are cordially invited to meet with us.

L. D. CARPENTER,
Cor. Sec.

Atlanta, Ga.

The National Association of Dental Examiners will hold its next meeting in Excelsior Spring, Mo., on Monday evening, August 4, at eight o'clock, and at other times during the week, between the sessions of the American Dental Association. It is important to have every State Board represented.

FRED. A. LEVY, D.D.S.,
Secretary.

The first annual graduating exercises of the University Dental College, Dental Department of the North-Western University of Chicago, were held in connection with the Medical Department, at Central Music Hall, on April 29th, at 2.30 P. M.

The following gentlemen received the degree of Doctor of Dental Surgery: Isaac A. Freeman, Illinois; Samuel H. Hunt, Illinois; Arthur E. Matteson, Illinois; William B. McCord, Illinois; John B. Palmer, Maine; Lucius E. Richardson, Ohio; Chas. W. Richardson, Wisconsin; William O. Vallette, Illinois; William C. Wise, Illinois; Sylvester M. Wilkie, Illinois.

JOHN S. MARSHALL, M.D., Dean.

The New Jersey Examinations.—The next meeting of the State Board of Registration and Examination in Dentistry of New Jersey will be held at the Coleman House, Asbury Park, July 15, commencing at 10 A. M.

Persons desirous to commence the practice of dentistry in the State must apply to the Secretary for proper blanks, and on them make application for examination at least two weeks before the above date.

The books for registration will also be open at this time. Persons desiring to register must bring diploma or certificate, also proof of having been legally in practice in New Jersey before the 7th of April, 1890.

G. CARLETON BROWN,
116 Broad street, Elizabeth, N. J.
Secretary.

The Missouri Dental Association will be held at Pertle Springs, July 8-11.

No effort will be spared to make this meeting one of the largest and most interesting in the history of the Association.

The American Dental Association will meet in Missouri next August, and it is especially desirable that we have a large attendance at our next meeting, so that we may make proper arrangements to receive the members of the American Dental Association in a manner that will reflect credit on the dentists of Missouri.

Now is the time to make your plans so that you may be able to be with us, and we earnestly solicit your presence.

Fraternally yours,

Ex. Committee: { J. F. MCWILLIAMS,
W. L. REED,
W. H. BUCKLEY.

Miscellaneous.

Keeping At It.

IT is a great mistake to suppose that the best work of the world is done by people of great strength and great opportunities. It is unquestionably an advantage to have both these things, but neither of them, quoting from the *Manufacturer and Builder*, is a necessity to the man who has the spirit and the pluck to achieve great results. Some of the greatest work of our time has been done by men of physical feebleness. No man has left a more distinct impression of himself on this generation than Charles Darwin, and there have been few men who have had to struggle against such prostrating ill health. Darwin was rarely able to work long at a time. He accomplished his great work by having a single aim, and putting every ounce of his force, and every hour of his time into the task which he had set before him. He never scattered his energy; he never wasted an hour; and by steadily keeping at it, in spite of continued ill health, and of long intervals of semi-invalidism, he did a great work, and has left the impression on the world of a man of extraordinary energy and working capacity. Success is rarely a matter of accident; always a matter of character. The reason why so many men fail is that so few men are willing to pay the price of self-denial and hard work which success exacts.

—*Scientific American.*

Tobacco.

THE amount of tobacco annually consumed in the United States is estimated by an apparently competent authority at 310,000,000 pounds. 70,000,000 pounds are utilized in the production of domestic cigars; 222,000,000 pounds of chewing and smoking tobacco are consumed; 8,000,000 pounds are used in the manufacture of snuff; 6,000,000 pounds are required in the production of cigarets; and 4,000,000 pounds of cigars are imported. This would make an average annual consumption of five pounds for every person in the country. But as not more than one-fifth of our population use tobacco, it follows that those who do, consume, on an average, twenty-five pounds each per annum. Opinions differ as to whether this article should be designated a luxury or a necessity. In speaking of the cost of the tobacco habit, an exchange says:

If the tobacco users of the United States would abstain for a period of two years from the chewing, smoking and snuff-taking habit, and place the money they would spend for tobacco in that period in a common fund, there would be enough money in the fund to almost wipe out the entire national debt, and five years' abstaining would give the head of each family in the United States enough money to invest in an eighty-acre homestead farm in the far Western States and Territories; or it would give us a navy of fifty first-class war vessels, fully equipped, and create a fund that would man and maintain them and the Navy Department for a period of at least twenty-five years.

It can thus be seen what is the magnitude of the tobacco habit of the United States, and what a multitude of devotees are willing to pay annually for a habit which gives them, like opium and alcohol, a slavish habit, degrading, injurious, expensive, and often destructive.—*Price Current.*

American Universities.

OWING to the great territorial extent of this country, its work in the direction of higher education has taken a peculiar phase. Instead of concentrating itself on the formation of a few colossal colleges, many smaller institutions have been founded all over the land. This has had an excellent effect in freeing higher education from the traditions of two or three great universities. On the other hand, it is claimed that these smaller institutions are of too low a grade. Recently a movement has been discernible in the same line, which has taken the form of re-enforcing the colleges by universities. These are now becoming quite numerous, and are of the highest grade. Johns Hopkins University, in Baltimore, the Clark University, in Worcester, Mass., the Stanford University, at Palo Alto, Cal., and a number of denominational universities, all consecrated to post-graduate studies, are giving a new aspect to American education. Work has already been done that has won credit for American science everywhere, and more is in the future. The late President Barnard, of Columbia College, was well in accord with this movement, and it is said desired to make his college a post-graduate university. It is certain that for the next generation a liberal education in American institutions will have a far higher meaning than it has had hitherto. The efforts of England and the Continent in the development of the intellectual life of their people, creditable as they are, may yet find a formidable rival here.—*Scientific American.*

Iodine for Rattlesnake Bite.—DEAR DOCTOR : In a late issue of the *Advocate* I noticed an article on "Remedies for Snake Bite," setting forth olive oil and ammonia as good and safe remedies. As to the virtues of olive oil, I know nothing as touching snake bites. Ammonia is good when you can get nothing better; but I write this to say that tincture of iodine is a specific in this trouble. If you can get it in time, apply in full strength to the wound, and give the patient one to five drops in water every ten minutes, for, say an hour, or until improvement sets in; then lengthen out to an hour. Some fifteen years ago, I was called to treat a dangerous case of snake bite, where the whisky remedy had been faithfully tried, and had failed, and my patient was fearfully swollen, and appeared near dying.

I gave the iodine in one-drop doses every five minutes, and was astonished to see the prompt and rapid recovery. In twelve hours the lady was able to resume her household duties, and suffered no further inconvenience from the snake bite. I have treated perhaps one dozen cases with this remedy, using no other, and each case with the most gratifying success.

Nine years ago this past summer, a white lad, whilst plowing for me, was bitten on his ankle by a ground rattler. I was from home, and did not see him for three or four hours after the occurrence. When I did see him, the limb was badly swollen up to the knee, and he was in great suffering. Too late to make an outward application, I put ten drops of iodine in as many teaspoons of water, and gave him a teaspoonful of this mixture every five minutes for a few times, then lengthened out to thirty minutes. I gave him about twenty drops in all, and the next morning he resumed his plowing without any inconvenience.

Some years ago I happened at a friend's house a few minutes after his dog had been bitten by a monstrous Florida rattlesnake, and gave his dog iodine in five or six-drop doses when he was thought to be dying. In six hours he was able to go out with his master cow-hunting.

In every case I have tried it, it has proved so satisfactory that I consider it a perfect antidote to the bite of the rattlesnake, or moccasin, or tarantula, and recommend it with confidence as such.—E. F. BROWN, M.D.—*Northwestern Medical Journal*.

Kerosene as a therapeutic agent is highly spoken of by Dr. H. A. Gross in the *Medical World*. It cures almost all pains, from toothache to gout and rheumatism. It is deodorized in this manner: Take of coal oil, 1 pint; nitric acid, 1 ounce. Mix. Let stand for a week, and pour off the supernatant oil. It does not in the least smell like coal oil.

Death in Soothing Syrup.—Coroner Belleau, in a letter to the Provincial Health Board yesterday, directed the attention of the authorities to a patent medicine called "soothing syrup," alleging that it was a deadly poison, and had already caused the death of half a dozen children.

The case which directed Dr. Belleau's attention to the poison was that of an infant which was taken ill on Saturday night. On Sunday the father went to a drug store, bought a bottle of the soothing syrup, and administered a dose to the child. It immediately went to sleep and remained so until Monday morning, when it died.

The coroner found that the patent medicine contained nearly 40 per cent of liquid extract of opium. He also learned that five other families had lost a child each in the same way, in all, six cases.

Quebec, November 28.

How to Keep Well.—David M. Stone, editor of the *New York Journal of Commerce*, has passed the three-score and ten limit of life, but it is said he has not had a vacation since 1849, nor been absent from his office one whole day in the last twenty-one years. When asked how he kept his health, he replied: "That is hard to say. I take plenty of exercise, plenty of hard work, plenty of sleep, plenty of belief in God and the future, with an easy conscience." He says he owes his good health and success to punctuality and regularity as much as to anything else.—*Selected*.

When a Frog is a Baby.—He is no frog at all, but a fish with gills and tail, and is called a tadpole. Then he lives altogether in the water. After awhile the gills waste away, and a pair of legs burst out of his skin, and grow quite long. Then out bursts another and shorter pair, then the tail shrinks away, a tongue comes, the lungs grow, and at last our little friend has put off his brown coat for a green one. He gives a hop and a jump out of the water, and is no longer a tadpole. When winter comes, froggie does not go South, but he hides himself deep in the mud at the bottom of the stream, and takes a long nap—until spring has come round again. Then he is as bright and jolly as ever, and gives his noisy concert every evening.—*Orange Judd Farmer*.